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ABSTRACT

This report presents a detailed analysis of various aspects of the first year of operation of the new School of Basic Medical Sciences at the University of Illinois. This new program in medical education is designed to increase the rate of production of new doctors, to alleviate some of the problems in health care delivery by shortening the amount of training time required, and to demonstrate that new medical schools can be developed without enormously high costs. Exposure to clinical settings, placement of temporal and procedural decisionmaking responsibility on the student, and elimination of the lecture/laboratory format are integral aspects of the program. Additionally, the involvement of the practicing physicians in the community in the educational process on a non-salaried basis is designed to help reduce the costs of medical education for the student while enhancing the continuing education of the physician. Appendices include research design and procedure, questionnaires, interview schedules, curriculum, and a paper on health care. (Author/MJM)

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FINAL REPORT

HEW-NIH-72-4075

INNOVATION AND CHANGE IN MEDICAL EDUCATION:
An Analysis of the First Year of Operation of a New School of Basic Medical Sciences

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I. INTRODUCTION

This is the Final Report for Contract HEW-NIH-72-4075. The contractor was the University of Illinois at Urbana-Champaign, and the report was prepared for the Department of Health, Education and Welfare, Public Health Service, National Institutes of Health, Bureau of Health Manpower Education, Division of Physician and Health Professions Education.

The purpose of the report is to present a detailed analysis of various aspects of the first year of operation of the new School of Basic Medical Sciences in Urbana-Champaign, a school developed as a part of the University of Illinois College of Medicine but designed to depart in many ways from traditional approaches to the basic science education of medical students.

The analysis of the new School is one of the research activities currently being carried out by the Health Services Research Program at the University of Illinois in Urbana. The design for the research on the School requires a monitoring of the process of development and change over time. This requirement, in turn, means that cooperation of all participants is essential. It should be noted, therefore, that the research has had the full and active support of the Executive Dean of the College of Medicine, the Dean of the School of Basic Medical Sciences and his staff, the faculty, the local medical society and its members, and the students. Without their cooperation, a research program of the sort we are currently engaged in would not be feasible.

The support provided by the Bureau of Health Manpower Education permitted an extensive amount of data analysis on a range of issues, as well as collection of interview data from the various participants in the program during its first year of operation. Collection of the questionnaire data was supported by a variety of local sources; the instruments used are presented in the Appendices to provide the reader with an overview of the range of data sources used in the analyses.

The original "Scope of Work" defining the various papers and analyses required by the contract consisted of a reasonably heterogeneous, discrete number of elements. To have followed the various tasks defined in that document in the sequence that they appeared would have resulted in an overall lack of cohesiveness. For this reason, the report is organized in a fashion which, while including the various items required by the "Scope of Work", provides some sort of overarching unity. In the very next section, the conclusions reached as a consequence of the analyses and the implications drawn from them will be presented, as will a brief discussion of the limitations of the design. The section following the conclusions and implications attempts to identify some of the basic issues in the field of medical education in the late 1960's in order to provide the context out of which the new program emerged. The program itself, which was developed, in part, as a response to several of the issues raised in that section, is described in section IV.

The actual data analysis is presented in sections V through VII. Section V focuses on the initial conditions which the program faced, both in terms of the attitudes, beliefs and expectations held by physicians and students and in terms of their socio-demographic characteristics. In this section, there is an extensive analysis of the assessments of both physicians and students of the potential outcomes of the program as well as analysis of student expectations, profiles of both groups, and analysis of the extent of student pre-program professional socialization.

The development and structure of the program are presented in section VI through analysis of the roles of physician advisors, students and campus faculty as well as a review of the curriculum. The final section focuses on program outcomes during the first year, specifically the impact of the program on the continuing education of physicians and student performance.

We will begin at the end, in a sense, by presenting the conclusions drawn from the various analyses and some of the implications these analyses and conclusions appear to have for the field in the following section.

II. CONCLUSIONS AND IMPLICATIONS

A. Introduction

The purpose of this section of the report is to present the conclusions reached on the basis of the data analyzed and to discuss both the programmatic and the research implications of the findings. This section is located at the beginning of the report in order to provide the reader with a brief overview of the most salient findings. For those who are interested, detailed summaries are presented at the conclusion of each sub-section throughout the report. Hopefully, there is no need to emphasize the fact that there is a lengthy process involved between the collection of a large body of data, the analysis of these data, and the development of conclusions based on these analyses. To understand the conclusions fully, therefore, it is advisable to be aware of the steps that were taken along the way. To the extent that these steps meet the usual evaluative criteria applied to research activity, reasonable confidence can be placed in the conclusions drawn. Decisions about the appropriateness of various procedures and analyses - as well as the conclusions reached - of course, rest with the individual reader.

As the various conclusions and implications are considered, two aspects of the research on which they are based should be borne in mind. First, the analyses are based on the first year of operation of the new School during which sixteen students were enrolled. Given the small size of the program initially and the fact that rapid expansion of the student body is anticipated in succeeding years, there is no reason to assume that all conditions found during year one will obtain over time. Second, because of the newness of the program, many of the participants-administrators, students, faculty and participating physicians alike-were involved in negotiating the roles which each were to play. As a consequence, there was a degree of fluidity present during the first year which might not necessarily continue as the program ages.

With these two very general caveats as interpretive guides, a discussion of the conclusions can proceed.

B. Conclusions

The conclusions presented below are based on the results of the various data analyses performed. The analyses themselves were based on multiple sources of information including questionnaires, interviews, observations and administrative documents. The order in which they appear does not imply any particular priority ranking, nor should it be assumed that the list includes all possible conclusions that could have been reached. In general, the attempt was to include items which bore on the goals of the program as stated by its administrators.

The conclusions are:

1. The results of the first year of operation of the new School demonstrate the feasibility of reducing the amount of time required for basic science training in medical school from two years to one. Students in the Urbana program performed well on the year-end college-wide comprehensive examination in the basic sciences (no failures), and fifteen of the sixteen passed Part I of the National Boards.
2. The results demonstrate that there are positive effects on the motivation of first-year medical students as a consequence of early exposure to patients in clinical settings. Students responded enthusiastically to the opportunity to spend time in patient care settings and were able to see the relevance of the basic sciences to clinical practice as a result.

3. *The results suggest that there were positive impacts on the continuing education of practicing physicians as a consequence of their involvement with students in the medical education process*. Local physicians in general perceived a need for maintaining their continuing education, and those who participated in the program during the first year felt that their involvement enhanced their own knowledge of the basic sciences.
4. *The results demonstrate the pedagogical effectiveness of a problem-oriented curriculum which places the burden of responsibility for learning directly on the student*. In general, the students responded positively to the amount of freedom to determine the pace and sequence of their learning provided by a curriculum which was problem-oriented as opposed to discipline oriented.
5. *The results suggest that it is inappropriate to assume that practicing physicians will respond homogeneously to a given set of non-monetary rewards in a program relying on voluntary participation*. While some physicians emphasized the importance of increased status within the medical community as a positive consequence of participation, others emphasized involvement with students and still others emphasized enhancement of basic science knowledge.
6. *Multiple demands on the time of practicing physicians create a sense of concern over extent of involvement in a voluntary program*. While physicians were generally enthusiastic about the program, nearly all indicated that time pressures conditioned the potential scope of their contributions.
7. *While the overall cognitive and affective orientations of both physicians and students toward possible consequences of the new*

program were similar, variability in these orientations reflected instrumental considerations. Where differences in orientation appeared, they were found to reflect differential stakes the two groups had in various outcomes.

8. The results suggest that the students in the program were typical of medical students in general in terms of their expectations, their socio-demographic characteristics and the extent of pre-program professional socialization. This conclusion, therefore, indicates that their performance cannot be attributed to differential selectivity in the admission process.

9. The results suggest that there is no need for formal differentiation of roles within a medical education program utilizing practicing physicians on the basis of their type of practice. An analysis of the characteristics of general practitioners and specialists in the medical community revealed few differences between the two groups indicating the advisability of such differentiation.

10. The results suggest that a differential willingness to participate in a voluntary program of this sort is not likely to be contingent on a "cosmopolitan vs. local" orientation. It was found, however, that the numerical superiority of specialists in the community might have consequences for the kind of socialization the students would experience over time.

11. The results demonstrate the need to monitor the effects of variability in medical school experiences on the career choices of students. If there is concern at the national level with producing proportionately more general or family practitioners,

more needs to be known about the differential effects of program structure on patterns of career choice.

12. The results demonstrate the positive consequences for both physicians and students of flexibility in role definitions. Due to the relative lack of formal role definitions for both groups, latitude was provided to individuals to negotiate the terms of their own roles. This latitude permitted both groups to work out solutions which met their own needs and the demands of the program simultaneously.

13. The results suggest that there were positive motivational consequences for participating physicians to work closely with their students because of the common year-end exam. Physicians tended to feel that the performance of their advisees would reflect on their own competence and were thus highly motivated to help them learn what was required.

14. The results demonstrate the necessity to integrate the roles of campus faculty and participating practicing physicians closely and carefully. Netther group was satisfied with the extent of contact between them during the first year, and this lack of contact was one of the major sources of conflict during that time.

C. Programmatic Implications

In the preceding section, the conclusions offered were based on the data presented in the main body of the report. In this section, the discussion goes beyond the data themselves and explores some of the implications that the conclusions might have, both for the program analyzed here and for other similar programs that might be envisioned.

1. Curriculum

It appears that the curriculum developed by the new School offers some interesting and important alternatives to traditional basic science curricula. The use of a problem-oriented mode in conjunction with the early exposure of students to patients in clinical settings within an overall structure which places the burden of responsibility for determination of the pace and sequence of learning on the student had very positive effects on student motivation and did not impede performance on standard examinations. The development of a computer based learning medium to supplement the more traditional media, while currently in the trial stage, offers some exciting alternatives as well. It is conceivable that widespread adoption of this approach to basic science education (and clinical training as well) would effect a redistribution of time and effort among medical educators permitting more time for research and changing the nature of the learning process from a routine, standardized lecture-laboratory format to a non-routine format with more substantive interaction between faculty and students. While it is likely that substantial resistance would be encountered and valid concerns would be voiced, it does appear that from a cost/benefit perspective on effective resource allocation and utilization the potential advantages of this curriculum should be seriously explored.

2. The Role of the Practicing Physician in Medical Education

The results of the first year of operation of the new School have demonstrated the feasibility of involving practicing physicians in the process of medical education; in fact, it could be argued that the results speak to the desirability of doing so. There appear to be several advantages to the approach. Although the evidence is not yet available, it appears that the use of physicians on a voluntary basis can impact positively on the skyrocketing costs of medical education without impacting negatively on the quality of the education provided to the student. This kind of outcome is, of course, highly desirable and enthusiasm for it must be tempered by some serious questions about the long-term viability of the non-salaried mode of affiliation. There is a good deal of evidence to indicate that the local medical community wanted a medical school for a variety of reasons, and that there was a good deal of local commitment to the effort to develop one. One must wonder about the likelihood that physicians would continue to offer their services gratis on a long-term basis, however, as the widespread concern among physicians at the outset about the amount of time required indicates.

Even if voluntary participation does not prove to be viable over time, however, the involvement of practicing physicians appears to be positive. If the trend toward re-examination of the qualifications of practicing physicians as a condition of licensure continues, provisions for continuing education will assume even greater importance than they currently have. The results of the first year of operation of the School indicate that involvement of practicing physicians enhances their continuing education. The implication, therefore, is that the educational needs of both students and physicians may be met within the structure of the new program. While quantitative indices of the extent of impact on the basic science knowledge of the physicians need to be developed, these implications would appear to merit serious consideration from a policy point of view.

3. The Concomitants of Growth

One question whose implications merit discussion is the question of what is likely to happen as the new program grows. Current projections call for an expansion of the student body to 128 by the year 1975. What consequences is this rapid expansion likely to produce?

To an outside observer, it is at least possible that the success of the program during its first year of operation was a function of its newness. All of the various participants were committed to making it work, a commitment which resulted in the expenditure of large amounts of time and energy, particularly on the part of the administration. With the passage of time, however, it is likely that the original enthusiasm will diminish somewhat and will be replaced by routinization, standardization and bureaucratization. There is some evidence to indicate that this is taking place during the second year. Thus, one might expect the outcomes over time to be less positive, holding size constant, and one might predict that with rapid expantion bureaucratization would increase at an accelerated pace, thereby exacerbating the negative consequences for outcomes.

The prognosis based on past experience is not terribly optimistic. Organizations tend to stabilize and become inflexible over time, and it is apparent that, in order to capitalize on the momentum generated during the first year, steps must be taken - particularly by the administration - to preserve the flexibility and avoid the routinization that inevitably accompanies increasing bureaucratization. The clear implication is that flexibility must be deliberately built in; in the absence of such precautions rigidity appears to be inevitable, and such rigidity would undoubtedly constrain the potential that the program offers. .

4. Toward a New Model of Medical Education

At this point, I would like to indulge in speculation, speculation conditioned by observation of medical education settings over a two-year period. I claim very little expertise in medical education per se, but I do have some experience in organizational modelling and would therefore like to propose the barest outline of an organizational vision.

The relative success of the first year suggests some exciting dimensions of a new model of medical education. This model incorporates some of the elements of the program analyzed, but goes beyond. Particularly in the pre-clinical years, the education of the student has taken place primarily within the relatively constricted physical boundaries of a school. There appears to be a set of assumptions about how learning takes place which is built into the organizational setting in which it occurs, assumptions which might usefully be re-examined. Why, for example, is it necessary that students be physically located in large groups in one place for long periods of time? Are there really economies of scale which make this the most effective way to organize the learning process when the needs of students, faculty and practicing physicians together are entered in the cost-benefit equations?

With the advent of new curriculum designs, with the realization of the motivational bases of student performance, with consideration of the potential contributions and actual needs of practicing physicians and with the development of computer-based learning media, one can envision a "medical school" very different from what we are used to. Specifically, I can see a program in which the administrative emphasis is on general coordination and quality control and in which the students are geographically dispersed, perhaps in small groups of five to ten, in communities within a distance of, say, fifty to one hundred miles from the administrative center. The center, with the help of remote computer terminals, would coordinate the activities of the students in general and would provide periodic testing and other forms of quality control. The nexus of the learning situation would be removed, however, from stately brick, stone and glass buildings in predominantly urban settings and located in settings where medical care is being delivered. Students would have the majority of their contact with practicing physicians and with faculty who might be required to make periodic visits to the communities in which they were located, the rest of their time being available for research.

Admittedly, the preceding is only a very rudimentary description of one possible model, but it appears to be a model which, when fleshed out, might increase the benefits to all participants in the medical education process by departing from traditional assumptions about organizational structure and education and by taking advantages of new developments in computer technology.

D. Research Implications

Three general research implications emerge from the design used in the study of the new School and are noted briefly below.

1. Monitoring of process over time is essential if theoretical and policy implications are to be fully understood. To cite but one example of the importance of longitudinal designs, the impact of the new program on the career decisions and location of practice decisions of medical students cannot be determined on the basis of cross-sectional research. Given the importance of these two kinds of decisions for national health manpower policy, investment in longitudinal research is the only strategy which is likely to pay off in the long run and to provide an empirically-grounded basis for policy formulation.

2. Multi-measure, multi-method approaches to evaluation are likely to enhance the quality of research results. Reliance on a single measurement technique or a single data collection modality can produce results which overlook important dimensions. At several points during the research reported here,

the quality of the interpretation was enhanced considerably by the availability of a variety of kinds of data. And while other researchers confronted by the same research problem might well have opted for other techniques, their results, too, would likely vary as a consequence of the range of measures and methods used.

3. Cooperation of all participants in the setting is essential. As noted in the Introduction, the active cooperation of all participants was received. This cooperation would not have been forthcoming, however, had there not been substantial investments of time made in explaining the nature of the research, in providing appropriate assurances of confidentiality and in providing feedback on the nature of what was being learned. The importance of this investment cannot be underestimated.

These, then, in skeletal form are the basic conclusions and implications drawn from the analyses presented in the report. A variety of additional conclusions and implications can be found in the summaries presented at the end of sub-sections and in the main body of the report as well. Those presented above represent a sampling.

Turning from the end to the beginning, the following section focuses on issues in the field of medical education in the 1960's, issues which together comprise the context out of which the new program emerged.

III. ISSUES IN MEDICAL EDUCATION

A. Introduction

Analysis of the various components of the School of Basic Medical Sciences -- and indeed of the school as a whole -- would be at best sterile and at worst misleading were there no consideration of the social and educational context in which it is encapsulated. The purpose of this section of the report is to present a variety of perspectives on medical education in this country - perspectives which highlight basic issues in the field. It is in response to many of these issues that the new program has been developed and it is therefore important in understanding the nature of the program to be aware of the concerns being voiced in the field in the 1960's.

The procedure followed in developing this section was to consult various bodies of literature -- popular as well as scholarly -- and to talk with various individuals in the field. While there is no pretense that this procedure was exhaustive, that is, that every point of view was obtained, it is felt that a broad sampling of opinion is represented in the material collected.

The discussion of issues that follows is in two sections. The first, which is somewhat discursive, presents a review of various perspectives. This review is followed, by an attempt to distill these perspectives into a set of issues in light of which the development of the new program can be discussed.

B. Perspectives *

The redesign of medical education and health services delivery demanded by the exigencies of society is most difficult. We take for granted the rapid accretion of new knowledge and technology in the medical sciences.

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* Prepared with the assistance of Frederick Brandt.

Yet, the medical school curriculum as a whole lags behind in developing ways to adopt new material and techniques into its program due to what appears to be an anachronism when introducing innovative ideas within traditional environmental and attitudinal contexts. By their very nature, comprehensive medical education and applied medical care have a strained continuity. But where we have a situation in which medical education must adapt to the demands and innovations in medical care and heightened levels of medical technology, then the normal sequence in which the medical school defines activities for the medical profession is modified. The medical school and its curriculum are themselves modified, and it is the changing pattern of society's needs and values which precipitates this change. Scientific problems require only material solutions; societal problems are quite different in that their solutions relate to people who collectively or individually are not easily restructured.

There is a problem concerning the redefinition of the medical doctor's role. Max Weber's hypothesis regarding social change points out that changing conditions call forth new types of individuals who are able to function more effectively in the new order. When the change of pace is very rapid as in the medical education system, it quickly outdates the skills and values of people who were successful in the old order.

Upheavels in the social order which have directly affected the medical education process include, according to Pifer (1970: 80):

a. A breakdown of professional authority with its concomitant new demand by the consumer of professional services that his voice be heard.

b. The essentially valid quest for social justice by the young, the poor, and the oppressed.

c. An attitude shift of American people toward access to medical care. What until recently was regarded as a commodity to be purchased by those who could afford it and dispensed as an act of charity to those who could not is now widely regarded as a basic right.

d. In the near future, pressure will not be on the availability of medical care per se, but on the national maintenance of individual health.

In responding to these pressing factors, Pifer sees the need for medical schools to produce doctors as broadly trained in the social sciences as in the biomedical fields in order for them to take the lead in organizing and bringing medical care to the disadvantaged, to study the social context of disease, and to tackle the enormous problems of health maintenance on a nationwide scale. These four factors - the emergence of a consumer voice, the quest for social justice, the new attitude toward medical care as a right, and the concept of health maintenance on a national scale, together will form the matrix which will mold a radically new health care system and a new medical education system.

The raw materials of education - knowledge, imagination, synthesis, and projection, are never static. With the infusion of vast amounts of new scientific knowledge, medical educators are aware that they cannot teach everything that is important and most of what is taught will be discarded and modified by new information in a few years. The lag encountered in the incorporation of new knowledge into the existing medical curriculum is a major problem. In change, not all groups within the academic community are in the same phase of cycle in adopting new knowledge and teaching techniques; thus, the coherency of the medical school educational process is strained, as Funkenstein (1968) has pointed out.

According to Jacobson (1967), the Flexner Report in 1910 produced a more homogenous medical education whereas current upheavel promises just the opposite. Flexner exposed the wide variation in quality of early twentieth century medical schools and recommended a strong dose of standardization and uniformity to insure improved quality control. But today, the wide variety of demands and pressures on the medical profession expose only rigidity in the educational process used over the last fifty years. Ironically, the force behind Flexner's much needed reforms of standardization was the need for quality, and it is in the name of quality that reforms in the direction of diversification in the medical curriculum are being urged today.

The list of society's needs and demands upon the medical profession is endless. Pifer (1970) argues that medical education must foster the study of systems, on a national level if necessary, of comprehensive health care, of costs, of the factors affecting health, of the design and administration of health facilities, of consumer needs, of new technologies that can improve efficiency, of the very meaning of health and the relationship of it to the other social sciences, etc.

In response to these needs, Simon (1967) sees the current goals of medical education as:

a. To effect the physician-scientist synthesis on the medical students.

b. To orient the students' thinking and behavior toward the problems of disease prevention and cure.

c. To train the students as leaders of teams.

d. To become concerned with the rendering of care and the quality of care.

e. To encourage the students to become informed of community needs.

f. To imperatively convince the students of the need for their continuing education.

Many questions have arisen over how the medical curriculum might adapt to trends in the medical profession such as the marked movement of doctors and students alike toward specialization. With the explosion of new knowledge in the sciences, Turner (1967) has suggested that only individual departments within the curriculum can keep up their development. The departments grow apart by becoming intensely immersed in their particular field without concomitant developments in administrative techniques to maintain the overall cohesiveness of the curriculum. A recognition that individual specialty programs in medical education require varying lengths of instruction contributes to the erosion of the four year block as the proper length of time for formal schooling. Internal and external forces continue to call the traditional medical curriculum into question. Some of these questions, according to Jacobson (1967), would be:

a. Should every student know the detailed anatomy of the skeleton when only a few will make use of the information in later practice?

b. Should any medical student leave school without exposure to research experience?

c. Should we tailor medical education to meet individual needs?

d. Is sufficient career counseling provided for students?

e. When should decisions about specialization be made, first year? Third year?

f. Are four years too long for formal medical education?

g. Should continuing education be the medical school's responsibility?

There is a growing recognition that many disciplines within the arts and social sciences are playing an increasing role, especially in areas such as family and comprehensive medicine. Many educators complain that the introduction of these disciplines complicates the curriculum and breaks down the departmental distinctions between the traditional disciplines of the medical curriculum, (Turner, 1967). It is also charged that while more is added to curriculum content and structure, little is eliminated from the cumbersome program (Luginbill and Andrews, 1967). Few departments are willing to cut any part of their program. New medical schools seem to provide the best medium for curriculum modification. Before a medical school is started is the optimal time for curriculum change and innovation because vested interests of faculty have not yet been established.

The traditional curriculum is inadequate in the student's eyes - it lacks flexibility. Pellegrino (1969) has argued that much of the work is seen as irrelevant to present day professional demands, and that it inhibits the development of motivation for self education. There is a sharper differentiation of student interests and capabilities, a closer appreciation of the need for individualizing the medical curriculum. Students feel that the homogenization of the traditional curriculum is no longer suitable, much of it being too abstract and without pragmatic value. Yet, the student seems to be in a poor position to make his grievances known because communication in general between students and faculty has not been a strong point, (Jacobsen, 1967).

Becker (1961) observed that the environment of the first year is so structured that freshmen are virtually isolated from everyone but their own classmates and faculty. Students attend few university functions; they have virtually no student government or other extracurricular activities. As recently as ten years ago most students were interested primarily in working with people, an interest which corresponded to that of the traditional medical practitioner. Since then the profile of student interest has changed considerably. The number of student/clinicians has declined markedly while at the same time the scientist, and to a lesser extent, the psychiatrist, have become the prominent figures in academic medicine (Funkenstein, 1968).

Changes in the interests and aptitudes of incoming medical students create pressure for curriculum modification. Some of these changes, according to Funkenstein (1966), include:

a. The effect on students of the increasing enrollment in colleges.

b. Changes in attitudes of the students producing much unrest.

c. Increased consultation of psychiatrists by students.

d. An increase in the number of students taking a leave of absence for a year.

e. The effect on students of new teaching and learning techniques.

f. An increasing voice that students have obtained in the evaluation of teachers, policies, curricula, and teaching techniques.

Students are increasingly critical of the conservatism of the medical profession and its apparent unresponsiveness to rapid social change. Some students want to depart from the notion in medical education that the student is isolated in an other-worldly place, the ivoriest of pure ivory towers, and that medical students are different, subdued, more serious. New activism of medical students is directed at two issues: curriculum, and the interaction between the medical school, students, and the community. One manifestation of this activism was the founding by William Bronston of the Medical Student Forum to discuss human and social needs, and issues not included in formal curriculums. This group has evolved into the Medical Student Conference and addresses itself to the question of how to structure and organize medical care for the urban ghetto (Michaelson, 1969).

Current negative generalizations about medical education include criticisms that it has contributed little toward the improvement of the practice of medicine, that medical educators have very little understanding of what comprehensive medicine truly is, and that family practice is finally an accepted specialty but severely deficient in providing residencies in family practice. Other grievances cite a trend toward the use of full time faculty in the clinical areas and the spurning of practicing physicians in the intimate teaching of medical students. In this regard, medical faculties in general are seen to have little sensitivity to medicine as it is practiced in the real world. The curriculum is considered woefully lacking in such areas as the teaching of comprehensive medicine and continuity of care (Pisacano, 1969).

Teaching comprehensive medical care is difficult under the conditions found in the teaching medical center. One study reported that, on the average, 250 adults of a population of 1000 will consult a physician in the course of one month. Nine will be hospitalized and one referred to a university medical center. Only one of 250 people who consulted a physician will be referred to a medical center, yet we continue to educate young physicians by his seeing only one of the 250 who go to a medical center. Critics of this circumstance would prefer a more diversified case approach to the teaching of clinical medicine since it is recognized that 94% of all medical graduates pursue the practice of clinical medicine (Pisacano, 1969).

Consistently, voices are heard proclaiming that medicine is a social science. It sounds like a truism, yet medical education reformers maintain it cannot be repeated often enough because many in medical education act as if medicine were a natural science and nothing else. Reformers accuse conservatives of smugness when they state that medicine has no problems other than those of its own success. Reformers point out that medical care problems cannot be solved through scientific innovation alone.

Medical education has accepted as inevitable a dichotomy between science and art and has tried to adjust itself accordingly. Evident in the prevalent separation of the preclinical from the clinical years in medical school, the reformer accuses the conservative of speaking about the education and training of future physicians as if they were not related (Millis, 1968). The result has been a serious discontinuity in the process of medical education.

With so many pressures coming from sources ranging from technology to popular sentiment, the curricular trends seem to find a secure commitment in specialization. Studies concerned with the content of specific courses found wide diversity between medical schools (Funkenstein, 1966). The better schools choose depth of instruction in selected areas, rather than superficiality in all (Turner, 1967). The student is asked increasingly to choose, which leads to elective opportunities both within courses and within curricula as a whole. The result is, of course, that the educational experiences of individual students will vary enormously within the same school and from one school to another. Independent study programs hope to relieve the lack of flexibility in curriculums which tend to hinder concentration on an area of greatest interest and stifle creative student interest, as Funkenstein (1966) has pointed out. Jacobson (1967) found that improvement in medical school curricula was being sought along with the following lines:

a. There must be better and continuing evaluation of curricular programs.

b. Concern for improving formal instructional methods.

c. A more fundamental biological education.

d. A shorter standard curriculum and an individualization of educational offerings.

e. The integration of educational information along interdepartmental lines.

f. An early exposure to clinical medicine.

g. Greater opportunities for research.

The medical school faculty is also experiencing social change. Faculty have increasingly considered research as a higher form of scholarly endeavor than teaching; moreover, teaching is generally poorly rewarded and carries little prestige.

The faculty is asked to play multiple roles: they have to become educator _cum_ researcher _cum_ consultant. However, medical professors who must carry out research, consult with health agencies, and treat patients as well as they can no longer be expected to concern themselves with the personal development of their students. Funkenstein (1968) argues that earlier criticisms of faculty "in loco parentis" are currently criticisms of faculty "in absentia".

Reformers such as Funkenstein maintain that the myth that excellence in research makes for excellence in teaching must be discarded and that teaching must be professionalized with the help of consultants from schools of education. Most professors of medical education, they argue, have no real knowledge of the pedagogical techniques taught in schools of education. In these circumstances it is difficult for curriculum planners to even approach the problematic question of how much exposure to research in relation to patients is appropriate. Students need close counseling when making such decisions. The remedy employed in the past assigned a tutor to advise and counsel the student as the need arose. It was felt that for the student to have a significant learning experience, the background of knowledge the student lacked would have to be provided by the counselor. This approach has been attempted several times but has met failure due to varying levels of tutor competence.

Other problematic issues center on the "definition" of the curriculum. Those who advocate a more "scientific curriculum" are seen as neglecting such points as the possibility that many institutions will have neither the desire, nor the faculty or students for so rigorous a program, and that some courses such as bacterial genetics might be better taught at the undergraduate level.

Controversy over the place of formal classroom teaching continues. Some say the formal classroom may be a poor place to educate medical students and that its prominence ought to be diminished. Others recommend that medical educators make formal classes more meaningful. While it is deadening to spend eight hours in formal classes, there is nothing quite so economical as a formal lecture for communicating concepts and facts (Jacobson, 1967).

Time and methods devoted to the teaching of basic and clinical medicine create another area of potential discontinuity. There is an inexactness of method in the clinical sciences where a student is taught how to draw correlations between symptoms and molecular pathology. This (Simon, 1967) contends, is in contrast to the methods of the basic sciences where there are more precise definitions and stricter control over variables. The basic sciences deal with processes common to most living organisms, the clinical sciences deal with single individuals, and preventive medicine concepts deal with groups. The task of medical education is to effectuate in the student the synthesis of these three orientations.

However, some danger exists where the student would conclude that the solution of human problems depends on so many uncontrollable and even non-measurable variables that scientific methods and critical though processes might best be reserved for problems at the organic, cellular, or subcellular level, and that human problems should be dealt with on an ad hoc empirical basis. It is partially in reaction to this empirical, non-scientific approach that most medical curriculum require intense concentration on scientific methods and rigor, almost to the exclusion of the humanistic aspects of medicine. Reformers fear the students would continue to prefer that most **aspects** of preventive medicine be delegated and fail to recognize public programs need community minded, scientifically trained M.D.'s. Traditionally, the medical professional has viewed himself as someone sought by those in need of services. There is a growing demand according to Simon that the physician be the advocate of health care for the community.

The transformation of an individual from a broadly oriented, humanistically inclined yet relatively uncritical student into a critical, analytic logical and scientifically oriented physician is one of the aspects of professionalization brought about in medical education. Cynicism often occurs simultaneously, but loss of idealism is considered of minor import when compared with gains in other directions.

Educational techniques give growing attention to the problems of learning rather than teaching. Luginbull and Andrews (1967) suggest that the professionalization of a student results not so much in what he is taught as in what he learns. Educators are searching for methods to improve the environment for learning in the medical school.

Medical educators maintain one would be hard put to find evidence supporting the statement that **there** has been an explosion of medical knowledge comparable to that in the basic sciences. Millis (1968) contends that medical knowledge in its impact on clinical practice has made little progress in the last twenty years and is virtually at a stand-still. The growth rate of skill is essentially linear, that is, an arithmetic progression. Knowledge seems to exhibit a logarithmic growth pattern, that is, a geometric pattern. Thus, there is a time lag between discovery of knowledge and its useful application in a practicing art.

This dislocation of developmental phases lends different philosophies to the teaching of medical concepts. Some professors rely on an active learning process and place less emphasis on passive memorization. At the urging of professors who deplore this approach as a "failure to teach the facts", many students enroll in more factual courses and are soon discouraged from pursuing any further studies in biology by the mass of details to be memorized. Students have two views about course material. They have to decide whether something is important according to whether it is important in medical practice, or whether it is something the faculty wants them to know and will test them on. Becker's study reveals that 54% of the students sampled consider important what the faculty wants, while 22% chose to focus what they considered to be important for future practice. The students seemed to have a largely provisional perspective, one grounded in immediate demands of high academic performance.

Medical educators realize that grades reflect ability and motivation with regard to the mastery of information, but by themselves are not as valuable as a profile of performance covering a wide range of criteria. They hope to ameliorate the disjunction that has developed between methods of learning facts and skills. One possibility suggested by Geertama and Chapman (1967), would be to modify the evaluation system to mirror the departmental and learning integration sought.

In caricature, there appear to be two medical education philosophies. The first is grounded in a combination of intuition, logic, and practical experience; the second has its roots in behavioral science and educational research. Reform of medical education can follow either of these two modes (Hess and Lebitt, 1969).

In the first approach, a medical education committee responds to general dissatisfaction, reviews its own curriculum and that of other schools, proposes a new curriculum, debates the pros and cons, and then some form of revision is usually made. This approach is usually taken, and has resulted in the rearrangement of courses within the four year program, alterations in the time schedule alloted to medical education, tailored programs to focus on specific kinds of students, innovative programs to produce certain kinds of graduates (comprehensive medicine, or academic medicine), and increased emphasis on the learning of the scientific approach to inquiry in the lab, at the bedside, and in the clinic.

The second approach is shaped by the behavioral sciences and educational research. It asks such questions as "how do human beings learn, and what factors in the learning environment are the most effective in promoting planned learning?" This philosophy has given rise to programmed instruction: audiovisual media, computer-aided instruction, simulation techniques, and application of group learning theory. Advocates of this research-based philosophy are more interested in what has been learned than what has been taught. It has become clear that students differ not so much in what they learn as in how fast they learn. This approach seeks to remove impediments to learning, and introduce instruments designed for quality learning experiences.

Apart from these two philosophies, many clamor for an increase in the offering of liberal arts courses to insure the total learning experience. Critics of this goal point out that medical students should not take liberal arts courses at the expense of needed science courses; are not science courses in themselves contributing to a liberal education? Further they ask: "Can a liberal education be assured by entrance requirements, or assumed because one has attended liberal arts courses?"

The combination of a "core curriculum" of basic sciences and electives has several problems. These, according to Jacobson (1967) include:

a. To offer a full range of electives a school must have a large full time faculty and provide excellent counseling for students; many schools lack the resources to do this.

b. Many students do not decide on an area of specialization in medical school, and what if they change their mind after taking many electives?

c. Two years of electives represents lost time to a student who knows what he wants.

d. How do we determine if "instant education" (a concentrated block of studies) is more effective than a leisurely pace, and for whom is it appropriate, a general practitioner or a heart specialist?

Millis (1968) points out that certain assumptions upon which teaching methods have been selected have consequences unintended by medical educators. These assumptions are:

a. Knowledge and skill are quite separable and therefore can be handled independently of each other.

b. If one wants to teach a skill, that is, an art, there must be an absolute identity between the ends to be achieved and the means employed.

c. The student can learn that which he is taught.

d. The student can supply all of the correlation between knowledge and skill and the synthesis that may be required.

The consequences of these four assumptions are reported to be:

a. Discontinuity in the program itself, independence on courses, and in the medical institutions and the profession.

b. A continued dependence upon apprenticeship as the principal educational method.

c. Duplication of effort in non-integrated course offerings within a curriculum.

d. Many of our institutions are anachronistic - organizational forms put together one, two, or even three hundred years ago to accomplish tasks which were really quite simple,to achieve single purposes, and under conditions of substantial stability. Obviously, this is no longer the case.

One flaw makes the system of apprenticeship impossible to use in the current epoch according to reformers. The objective of the apprenticeship is to transfer from the master to the apprentice all that the master knows, and no more. Therefore, the ceiling of educational aspirations of the apprenticeship system is the knowledge of the master. This system may have worked well when the rate of discovery of new knowledge was relatively slow and the rate of discovery of new skill was even slower. But now the educational objective must be to provide a mechanism wherein the student of this generation must surpass the teacher and the apprentice must surpass the master.

Almost profound influence of any departure from the master-apprentice relationship will center on the criteria used for identifying completed professionalism. If students initially just cover the high points of the field in order to permit them to specialize at an earlier stage, the criteria for medical competence in that area in relation to the other areas of medical education will need to be redefined. The educational system is a somewhat mad world in which we hold time as a constant and allow achievement to be a variable. There must be found ways of shortening the time period of medical school without lowering the quality of the graduates. This, according to Hess and Lebitt (1969), would place a greater burden on quality control, the heart of which is the educational measurement system.

Much dispute comes from discussion of evaluation within any educational system. The preparation for and duration of medical school marks a time of intensive academic competition for students. Many feel the exaggerated atmosphere of competition is not good preparation for the future physician who will have to work cooperatively with other physicians and health care personnel. As it is, students usually understand their eventual role as that of an individual physician dealing with individual patients. They do not perceive themselves as leading teams or dealing with population groups.

Beginning students generally find that medical school will be different from college, where what they learned often had little direct application to their lives. In medical school they think everything that is taught will be relevant to the clinical years and to medical practice after graduation. This can hardly be the case as they later find out by the very nature of the curriculum: for example, the future psychiatrist often does not see what part bacteriology will play in his future practice.

Becker found that while faculty and medical educators in general emphasize the importance of continuing education,students feel that medical school is the end of one important phase in their training and not necessarily just the start of a lifetime of training. Student perspectives proceed from assumptions quite different from those of the faculty about the nature and purpose of medical education. Studies show these disparities to be presumptive evidence of student autonomy. Becker maintains strongly that the student's perspective is provisional, that is, largely short term, except for some rather vague long term ideals. It is the students themselves who must solve their overloaded study problems. A lack of a consistent faculty philosophy turns students back to themselves for solutions to their problems. Faculties of state universities must always keep the probability of student rebellion in mind, since instances of complaints to the state legislature have been known to occur.

Students must decide whether some course work is important according to whether it is important for future medical practice or whether it is what the faculty wants them to know and will test them on. The nature of the curriculum plays a part in what perspective the student assumes. For example, gross anatomy and microanatomy demand different techniques of teaching, studying, and examinations.

Controversy arises over the appropriateness of and emphasis on the educational methods as well as the merits of these different techniques: in gross anatomy, a student must organize his study -- it is considered a "thinking course"; in microanatomy the coursework is highly structured and considered a "spoonfed course". The desired curriculum continuity and integration has a major stumbling block here. There are structural problems hindering the integration of curriculum material; while microanatomy might study all the news at once, labwork dissection is done in layers, and it is impractical, if not impossible, to trace all the nerves there at one time. A well integrated curriculum program will require an excellent supradepartmental organization to reconcile this and other disparate aspects of medical education.

Of the many lists delineating the problems of medical students, that proposed by Funkenstein (1968) appears to be somewhat representative:

a. Difficulties in orienting to the medical school environment.

b. A marked sense of competition.

c. A scarcity of leisure time.

d. A loss of close relationships with faculty members.

e. A decline in the caliber of teaching.

f. A problem of challenge and response.

g. Lack of relevance.

h. Conflicting demands.

i. Anachronistic skills and values.

j. Prolonged dependency.

k. Financing a medical education.

Students often have their unrealistic expectations broken as they encounter these problems. They are characterized by experiencing high levels of anxiety; a significant number of medical students display all the usual adolescent problems of personal development in greatly magnified form. They find it difficult to make deep friendships with other classmates since they must relate to them in a competitive way. At every turn, students need to learn what is expected of them in their new environment and to evaluate their performance. Often these role expectations are in conflict.

Faculty members hold Ph.D.'s in the preclinical sciences rather than M.D.'s,and lab assistants are grad students in these disciplines; as Becker demonstrates, neither serve as career models for beginning medical students. Marked confusion is created in students by contradictions in what is expected of them; the faculty members press them toward academic careers, while practitioners encourage them to enter private practice.

Funkenstein (1968) argues that students are afflicted with a lack of proper orientation, overwhelming workloads and unrealistic academic standards, a lack of coherent counseling and professional help as required, a need for meaningful interpersonal relationships, a lack of adequate health services, a lack of control over their own destiny, and inadequate channels of communication.

Further, medical school curricula were not designed for the increasing diversity and the marked specialization of students entering medical schools today. It is said that colleges are becoming pre-professional institutions because of rising specialization and the large numbers who are planning to enter graduate schools. Ideally, medical science courses should form a continuum with similar undergraduate courses. This is only possible with consideration given to individual students' preparation and needs, and cannot be fulfilled with a one-design curriculum.

Increasingly, we see the presence of new kinds of professionals -- psychologists, social workers, and occupational therapists -- involved in the care of patients. This has been the result of a change in the conceptualization of causality in medical care (Millis, 1968). Just as it is recognized that the lack of insulin is not the cause of diabetes, more emphasis is being given to the implications of social problems the precede or are in conjunction with biomedical problems. The need is urgent for medical education to provide the means for new physicians to work in concert with these professionals in common understanding.

At the organizational level, Hubbard and Howard (1967) have argued that program size is an important influence on the kinds of experiences that medical students are likely to have. In characterizing the nature of this influence, they suggest that the advantages of the small medical school include at least the following:

a. Individual attention can be rendered to each medical student.

b. Presents a maximum opportunity for independent initiative by students.

c. The student body is likely to be homogenous, teaching functions can be more easily and probably more effectively carried out in these circumstances.

d. Provision of a potential opportunity for the determination of a specific educational objective, is, family practice or academic medicine.

Among the disadvantages of the small medical school are these:

a. The small number of students cannot justify a large faculty.

b. The inability to marshal strong across-the-board financial support.

c. It is often unable to provide adequately for certain very expensive facilities which all medical schools, large or small must have.

The advantages of the large medical center include the following:

a. It can include the individuals with expert knowledge in highly specialized fields.

b. The presence of a heterogenous student body exposing students to others who have widely varying backgrounds and with different interests and abilities.

c. An opportunity for meaningful interaction with other health science personnel, a good exposure to the "team approach".

d. It can initiate new programs from existing strengths.

e. Its large financial base can make investments in the support of certain very costly central facilities and equipment.

f. It can provide continuing education on a substantial scale.

g. It can provide clinical consulting services to the local community.

The large medical center, however, is by no means without disadvantages. These include at least the following:

a. Problems of communication.

b. A decrease in the feeling of involvement with the institution on the part of the faculty member.

c. The strong departmental system required for administration of the complex, large medical center leads to fragmentation of the teaching program and places serious obstacles in the way of the development of meaningful interdepartmental teaching programs.

d. The large department, advantaged by the presence of experts in various special areas, is in some measure disadvantaged by the variety of their interests.

e. It requires a large clinical base which requires provision of services substantially beyond those necessary for the teaching program per se.

f. Extremely difficult coordination responsibilities are placed on the administration and department chairman. The proposition that there is an inherent inverse relationship between medical school class size and quality of instruction is generally rejected. Also rejected is the assumption that the modern medical center's size, complexity, and problems are due solely to the number of medical students in the environment.

In a somewhat different vein, efforts have been increased to encourage a more lasting liberal education for medical students. Features in the new curricula which serve to further this end include an earlier entry into the medical school which should relieve the student of seeing his liberal studies as a necessary nuisance before getting at the medical studies which really interest him. The humanities may be more palatable to today's students if they are presented in the course of their medical education and then are related to the existential problems and clinical situations they encountered daily. Physicians can also expect that their liberal studies will become part of their continuing education.

One new trend is alarming established physicians. An increasing number of physicians feel that private practice of medicine no longer commands prestige, that it will be taken over by the government, and that sooner or later their independence will be lost. Several events have contributed to this feeling. There is a built in tendency toward obsolescence of certification examinations due to scientific advancement, and it is also said that such examinations test the school or the department more than it does the student. This increases the clamor for national unity in professional examinations. This trend along with the changing attitude that the medical manpower shortage is a national problem have precipitated growing governmental concern with the medical profession and its education system.

Established physicians maintain that the healthiest part of our heritage clearly identifies one physician as responsible for one patient, and they view with alarm anything, including excessive organization, that threatens to diffuse that responsibility (Popper, 1967). One result of this position is the AMA discouragement of federal aid to medical students even though the student's medical education represents an investment of $60,000; nearly half of all medical students come from families in the upper 10% bracket of income nationally, with predictable consequences for the distribution of health services on a national basis. These, then, are some of the perspectives in medical education that emerged in the 1960's. In the following section, an attempt will be made to synthesize what appear to be predominant themes as a way of defining basic issues in the field.

C. Synthesis

Despite the apparent diversity of the views presented above, there are areas of convergence. Basically, it seems that the field of medical education was highly volatile as the current decade began. The ferment was created, in part, by the inability of social structures in medicine to adjust rapidly to demands occasioned by new developments in medical technology and, in part, by changing values and priorities regarding the nation's health. Whatever the underlying causes of controversy and debate in the field of medical education, the effects have been pervasive; none of the actors in the medical education "system" has been immune. The issues that emerge are diverse in that they reflect the concerns of a variety of individuals occupying a variety of positions in the system; the convergence that is evident tends to occur among individuals occupying similar positions.

The foregoing remarks suggest a way of grouping the issues in the field. Since it is highly likely that one's position in a system will determine, at least in part, his view of that system, issues will be presented by category of systemic position. Thus, the discussion will focus on definitions of issues by administrators, practicing physicians, students, faculty, consumers of health services and legislators and will be in the form of questions posed by each group.

Administrators

1. What can be done to control costs of medical education in the face of increasing operating expenses and demands for increased outputs?
2. What kind of curriculum will meet the needs of both students and faculty?
3. How can the need for individualized instruction within more flexible curricula be reconciled with the continuing need for basic research?
4. What efforts, if any, could or should be made to increase access to medical education opportunities for the disadvantaged and minority group members.

Practicing Physicians

1. How can the practicing physicians possibly keep abreast of new diagnostic and treatment techniques?
2. What role, if any, could or should the practicing physician have in the medical education process?

3. Through what means can the practicing physician learn behaviors which are appropriate in the "team approach" to health care delivery?

Students

1. How can the applicability of the basic sciences to clinical training and practice be demonstrated?
2. How can differential abilities, motivations and learning paces of students be effectively encompassed within a medical school curriculum?
3. How can the medical education experience be made more "relevant"?
4. How can the process of medical education be organized so that student performance is enhanced while dissatisfaction is reduced?

Faculty

1. By what mechanisms can the faculty be motivated to take advantage of new developments in educational technology?
2. How can the time of the faculty be organized so as to optimize both the teaching and research functions?
3. Can effective distinctions be made between the roles of teacher and researcher in the medical school setting?

Consumers of Health Services

1. What can be done to insure that health care is more evenly distributed across populations?
2. How can new doctors be trained so as to insure that they do not lose sight of the fact that they are diagnosing and treating human beings as opposed to "cases"?

Legislators

1. What kind of policy can positively affect the distribution of physicians, i.e., encourage more physicians to practice in rural areas?
2. What kind of policy can positively affect the supply of physicians, i.e., increase the supply to the point where the ratio of providers to consumers is "reasonable"?
3. Given the rapidly increasing costs of medical education, what kinds of support, if any, should be provided by the federal government to medical schools?

The issues as defined by the preceding questions appear to be representative of many of the concerns articulated by and about the medical education community during the 1960's. Costs, curriculum design, social relevance, distribution of services and manpower deficits all are issues which emerged in the context of a value system defining medical care as a right of every citizen. These issues together constitute the context out of which the new program analyzed in this report emerged. Without some appreciation for the amount and nature of the controversy swirling within the field at the end of the decade, the rationale for many of the elements of the program described in the following part of the report would be difficult to ascertain.

REFERENCES

Becker, Howard et al, Boys in White; Student Culture in Medical School, Chicago, Illinois: University of Chicago Press, 1961.

Funkenstein, Daniel H. "The Learning and Personal Development of Medical Students and Recent Changes in Universities and Medical Schools", Journal of Medical Education, 43, 1968.

Funkenstein, Daniel H. "Current Changes in Education Affecting Medical School Admissions and Curriculum Planning", Journal of Medical Education, 41, 1966 .

Geertama, R. H. and Chapman, J. E. "The Evaluation of Medical Students", Journal of Medical Education, 42 (10), 1967.

Hess, Joseph and Lebitt, Morton "New Philosophies in Medical Education; Their Effect on Recognition of Competence", Journal of the American Medical Association, 213, 6.

Hubbard, William and Howard, Robert "The Education Environment in the Large Medical School", Journal of Medical Education, 42 (7), 1967 .

Jacobsen, Eugene G. "Revolution in the Medical Curriculum", Journal of Medical Education, 42 (12), 1967.

Luginbull, William H. and Andrews, Edward C. Jr. "A New Curriculum: Its Evolution, Design, and Implications", Journal of Medical Education, 42 (9), 1967.

Michaelson, Michael G. "Medical Students: Healers Become Activisits", Saturday Review, August 16, 1969.

Millis, John "The University Presiden'ts View of Medical Education and Medical Care", Views of Medical Education and Medical Care, John H. Knowles ed., Cambridge, Massachusetts, Harvard University Press, 1968 .

O'Malley, C. D., Ed., The History of Medical Education, Berkeley, University of California Press, 1970.

Pellegrino, Edmund "Medical Practice and the New Curricula", Journal of the American Medical Association, 213, 5.

Pifer, Alan "A New Climate", Journal of Medical Education, 45 (8), 1970.

Pisacano, Nicholas J. "Generally Speaking", Journal of the American Medical Association, 213, 3.

Popper, Hans Trends in New Medical Schools, New York, Grune and Stratton, 1967.

Simon, Harold J. "The Medical Student: What He Wants and Needs Versus What He Gets", Journal of Medical Education, 42 (8), 1967.

Turner, Thomas B. "The Medical Curriculum in Evaluation", Journal of Medical Education, 42 (10), 1967.

IV. PROGRAM DESCRIPTION*

A. Introduction

As indicated in the previous section, the intensity of organized concern for the health of the citizenry has recently reached new levels of intensity in the United States, with high priority being placed on improving the nation's health by the present Administration. While this global concern has a great many specific components, one aspect, in particular, has been the subject of widespread debate -- the training and utilization of health manpower. It has been argued that there is a lack of trained physicians and that health care delivery suffers as a result. A solution often proposed, if the premise is accepted, is to increase the production of doctors through the creation of new medical schools, the shortening of the training period, or some combination of the two (Fein, 1967; Sheps and Seipp, 1972).

At the same time that questions about the adequacy of existing levels of trained physicians are being raised, questions about the nature of the educational technology most appropriate to the production process are also being raised (Stetten, 1971). Curricula are being revised in the light of criticisms of the traditional Flexnerian model of medical education, and new assumptions about the nature of the training that ought to be provided are being made (Martire, 1969; Houser, 1971).

Overlaying both sets of questions is the spectre of the rapidly expanding costs of medical education. Many medical schools in the United States are currently facing severe financial crises and are searching for ways of resolving them (Walsh, 1971). Federal subsidy of both the costs of construction of new schools and of maintaining existing or slightly increased levels of operation of existing schools has been widely discussed as a possible solution. It is not at all clear at this point in time, however, that such governmental intervention is highly desirable either from the government's point or view of that of medical educators.

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* This section was adapted from John R. Kimberly, Innovation in Medical Education: A Social Science Perspective, presented at the Third International Conference on Social Science and Medicine, Elsinore Denmark, August 1972.

These three contextual constraints -- increasing demand for trained physicians, dissatisfaction with traditional programs of medical education, and mushrooming costs of medical school operation -- have led to a variety of responses at the organizational level designed to produce changes in both the form and content of medical education. The purpose of this section of the report is to describe one such response. This description is designed to demonstrate the ways in which this new program has been designed to confront some of the issues in medical education discussed above, as well as to introduce the characteristics of the program to the reader.

B. Characteristics of the Program

The program to be discussed herein is, in actuality, a new School of Basic Medical Sciences which is a part of a midwestern state university College of Medicine. Having enrolled its first class of students in the fall of 1971, the school represents an attempt to create an innovative response to many of the problems currently facing medical education. As such, it departs in many ways from traditional assumptions about the proper form medical education should take. Basically, the school permits the student, in conjunction with a practicing physician in the community who serves as his advisor, to learn the basic sciences with a great deal of individual autonomy, proceeding within limits at his own pace and utilizing the resources he defines as appropriate. The curriculum is built around a "multiple problem approach to the basic medical sciences" (Bloomfield et al., 1971: 11). The student is exposed to a particular medical problem in a clinical setting with his advisor; he then proceeds to learn the basic science material which is related to the clinical problem. At an appropriate time, determined by the student in conjunction with his advisor, he takes an examination on the basic science aspects of the problem studied. The examination is given by the student's evaluator who is also a practicing physician in the community. In order to complete the curriculum the student must complete a specified number of problems and pass a college-wide comprehensive examination in the basic sciences.

A number of aspects of the program are unique and warrant brief discussion. First is the involvement of practicing physicians in the educational process. The program currently has sixteen students enrolled, each of whom was assigned an advisor from a group of physicians selected by the local county medical soceity from a county-wide pool of physicians who had indicated a willingness to participate in the program. The matching of students and physicians was done randomly. The role of the advisor is to guide the student through the basic medical science curriculum and to provide him with an appreciation for the clinical application of the basic sciences. The advisor position is unsalaried, and it is expected that he will spend approximately four hours per week with his student. Further, the expectation is that his continuing education will be enhanced through his relationship with the student.

In addition to the sixteen advisors involved in the program during its first year of existence, there were four evaluators, also practicing physicians, who served on a voluntary basis, each of whom was responsible for reviewing student progress and determining acceptable levels of performance in the specific problem areas. Each evaluator worked with four sets of students and advisors and the expectation was that their role in the evaluation process will stimulate their continuing education as well.

Local physicians have also played a key role in curriculum development and planning, again on a non-salaried basis. What is unique about this aspect of the program is the utilization of an educational resource which has traditionally been untapped. The assumption is that by involving practicing physicians in the educational process, students will be more highly motivated as a consequence of their immediate exposure to clinical applications of the basic sciences, physicians will be more highly motivated to maintain competence in the basic sciences, and costs of medical education will be reduced substantially.

A second aspect of the program which is unique is its structure and the assumptions about the learning process which underlie it. Each student is permitted, within limits, to master the basic science aspects of disease problems at a speed which he himself determines. It is assumed that the learning process is facilitated when the student is highly motivated; further, it is assumed that student motivation will increase when 1) he can see the clinical relevance of the basic sciences he is attempting to learn and 2) there is a greater degree of self-determination and autonomy than has typically been found in medical schools. While one can clearly quarrel with these assumptions, they are an integral part of the program.

The campus faculty play a new role in the program as well. While they are involved in the presentation of discipline-oriented seminars on a variety of topics, they do not spend large amounts of time in the lecture hall or the laboratory as in many schools. Rather, they act as a resource upon whom individual students or groups of students may call when confronted by specific basic science problems. The intent is to redefine their role in a way which eliminates activities which are often routine from their point of view and are perceived as such by students, with a resulting lack of enthusiasm on the part of both groups.

In addition to the above, it is anticipated that the students will complete their basic science training after one year and can begin their clinical training in their second year of medical school. The hope is that ultimately the amount of time it takes to become a doctor can be reduced by one year.

Two further points should be made regarding characteristics of the program. First, it is new, and is therefore confronted by a range of problems as well as promise. In the absence of well-established precedents for behavior, decisions often are made on rather much of an _ad hoc_ basis, with the inevitable frustrations such a situation produces. In contrast to solidly entrenched bureaucratic structures characteristic of organizations that have achieved a degree of longevity, the program has had to maintain a degree of flexibility in accordance with its intendedly innovative character. As a consequence, its "structure" has been characterized by a certain fluidity in its first year of existence which is not likely to continue with age.

Second, the program is expected to grow. A class of thirty-two students, double the size of the first class, is currently enrolled, and it is anticipated that this rate of growth will continue until a size of 128 is reached. Further, there is the hope that the scope of the school can be expanded to include a full medical education program.

C. Summary

By way of summary, the new program in medical education which is the focus of this report is intended to provide solutions to at least three sets of problems that are currently widely discussed by those concerned with health and related areas in the United States. First, it is designed to increase the rate of production of new doctors, an activity intended to reduce the alleged shortage of health manpower and therefore, to alleviate some of the problems in health care delivery, both by shortening the amount of training time required and by demonstrating that new medical schools can be developed which do not have the enormously high costs of traditional programs associated with them. Second, by exposing the student immediately to clinical settings, by placing some of the burdens of temporal and procedural decision-making in educational matters on his shoulders, and by eliminating the lecture/laboratory format, some of the relatively longstanding dissatisfaction on the part of all participants with basic science education is designed to be eased. Finally, involvement of the practicing physicians in the community in the educational process on a non-salaried basis is designed to help reduce the costs of medical education of the student while enhancing the continuing education of the physician at the same time.

Based on the foregoing description, it is evident that the program is an attempt to produce change in a positive direction in an important segment of the health system through incorporation of a variety of assumptions about that segment in an organizational form. The social and psychological implications it has are many and varied, from both applied and theoretical perspectives, and the situation presents an exciting and challenging social science research opportunity. The remainder of this report is devoted to description and analysis of a variety of dimensions of the first year of the program's operation.

REFERENCES

Bloomfield, D., T. E. Gamble, W. Sorlie, and J. D. Anderson "Relevance in Teaching Basic Medical Sciences--Preliminary Report of an Approach to Innovation." Illinois Journal of Medicine. (In Press).

Fein, R. The Doctor Shortage: An Economic Diagnosis. Brookings Institution, Washington, D. C. 1967

Houser, Howard W. "Objectives in American Medical Education: A National Survey of Medical Faculty Opinions." Health Care Research Series #17. Iowa City: The University of Iowa, 1971.

Kimberly, John R. Innovation in Medical Education: A Social Science Perspective. Presented at the Third International Conference on Social Science and Medicine. Elsinore, Denmark, 1972.

Martire, Joseph R. "The Crisis in American Medical Education: The Student Viewpoint." Journal of Medical Education 44 (November): 1070-1075, 1969.

Sheps, C. G. and Conrad Seipp "The Medical School, Its Products and Its Problems." Annals of American Academy of Political and Social Science 399 (January): 38-49, 1972.

Stetten, D. "Projected Changes in Medical School Curriculum." Science 174 (December): 1303-1306, 1971.

Walsh, J. "Health Manpower Training: Funding Levels at Issue." Science 174 (December): 1003-1005, 1971.

V. INITIAL CONDITIONS

A. Introduction

Because the program was new and because the researchers learned about it well in advance of the time it was to begin operations, it was possible to plan the research carefully. Most studies in organizational psychology and organizational sociology are carried out in situations where there is an on-going, well-developed structure of roles, expectations and norms. These structures are taken as given and are assumed to be non-problematic. In this case, however, the researchers had the opportunity to examine the emergence and development of these structures, an opportunity which is rare indeed. For this reason, therefore, it was important to gather certain kinds of information from program participants _prior to_ their involvement in it. This information would permit a determination of the _initial conditions_ characterizing the program, and would provide the base-line data essential to an analysis of its development.

Apart from theoretical reasons, there were some important reasons for gathering information about initial conditions from a policy standpoint. Chief among these was the notion that program outcomes might be expected to be a function, at least in part, of the characteristics of the resources involved and the assessments of outcomes by participants. If this were the case, then it would be helpful to those interested in developing a similar program or one with comparability along certain dimensions to be aware of the nature of the inputs to this program. In addition, it was deemed important to document as fully as possible the similarities and differences among program participants over time and to examine the relationship between these characteristics and program outcomes. It was felt that this information might facilitate decision-making about who would be likely to participate most successfully in a program of this sort (in terms of both students and physicians) and about what kinds of relationships within the program itself were more likely to be successful. (For example, as a general rule should there be an attempt made to assign physician Advisors to students who have similar backgrounds and similar beliefs or do these factors appear to make little, if any, difference in terms of outcomes?)

In order to document the initial conditions of the program, a variety of kinds of data was collected from both physicians and students. Of interest were both socio-demographic characteristics and their attitudes toward and beliefs about the program. In addition, it was felt that student expectations about their own roles and the roles of the physician Advisors and Evaluators prior to the start of the program constituted another important baseline and should be monitored. Finally, other research in medical education (e.g., Merton, 1957) indicated the importance of the medical school as an agent of socialization in the medical profession, and it was felt that in order to examine the impact of this new program on student socialization, the extent to which students had adopted beliefs characteristic of the medical profession prior to their entrance in medical school should be determined.

This section of the report, then, is divided into two basic parts. In the first, the attitudes and beliefs of the local physicians and the first-year students about the program are examined in the context of their assessments of program outcomes, as are the student expectations about their own roles and the roles of their physician Advisors and Evaluators. In the second, the socio-demographic characteristics of the local physicians and the first-year students are examined, as is the extent of pre-program professional socialization **among the** students. Taken together, these sections constitute an analysis of some of the most basic initial conditions surrounding the new program.

B. Attitudes, Beliefs and Expectations

1. Assessments of Program Outcomes and Participant Attitudes and Beliefs*

1.1 Introduction

Behavioral scientists have long been interested in the question of how behavioral predispositions (e.g., attitudes and beliefs) vary among individuals and to what extent these variations are related to patterns of behavior, (Tittle and Hill, 1967; Crespi, 1970). Underlying this general question is the assumption that these mental dispositions serve as a frame of reference for the individual when he or she actually comes in contact with the focal-object of these mental constructs.

While the evidence on the relationship between attitudes and behavior is mixed, it was felt that it was important to examine the extent of similarity in the assessments of program outcomes by potential participants in order to obtain an early reading on similarities and differences in orientations among and within categories of potential participants. Such a reading was potentially useful to those administering the program as well as to our own research concerned with exploring the kinds of factors underlying individual and group adjustment, social integration, satisfaction and performance.

1.2 Analysis

For the purposes of analysis, following Fishbein (1967) beliefs were defined as cognitive orientations toward a stimulus-object -- in this case, assessments by potential program participants of the likelihood of various outcomes of the program. Attitudes were defined as affective orientations toward a stimulus-object -- in this case, assessments by potential program participants of the desirability of the same outcomes. Any initial convergence or divergence on these dimensions within and/or between categories of potential participants might affect their behavior in several ways. First, if congruence were high, there might be less interpersonal friction, and consequently the early adjustment and social integration of various program participants would be facilitated. Second,similarity in frames of reference toward program outcomes might enhance individual satisfaction with the program and perhaps even performance. And finally, if congruence were high, conflict over program goals would be unlikely, an important consideration, particularly in a new program.

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* Prepared with the assistance of Michael A. Counte.

The overall sample for this analysis consisted of two separate groups. First was the sub-sample of all sixteen students who were matriculating in the first year of the school's operation (1971-1972). Second was a sample of 113 practicing physicians from the local area. This sample, which is reasonably representative of all practicing physicians in the area* can be viewed as the pool of potential physician participants.

The outcomes, which both groups were asked to evaluate, were all potential outcomes of the new program that a pretest group of 113 physicians generated when asked the question: "What do you feel are all of the possible positive and negative outcomes of this new program in medical education?" As mentioned earlier, to measure beliefs or cognitive orientation each respondent was asked to assess the degree to which each of these outcomes was likely. To measure attitudes or affective orientation each respondent was asked to indicate the extent to which each of these same outcomes was desirable. These data were all collected prior to the inception of the program in the Fall of 1971.

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* For a discussion of the representativeness of the sample see Appendix A. The instrument used to elicit the assessments of outcomes can be found in Appendix B.2.

The results of the analysis are presented in Tables 6-37 at the end of this section. The procedure followed was to analyze the assessments of each outcome separately for students and physicians and then to rank the mean group assessment relative to all other assessments. This procedure permits examination of the extent of convergence between the two groups on each of the 32 outcomes used and also provides an indication of where each outcome stands in relation to all others with respect to how desirable and how likely it was viewed by each group.

Each of the outcomes was assessed on a seven-point scale on both the likelihood and desirability criteria. For the purposes of this report, the scales were collapsed into three categories: likely, unlikely or unsure and desirable, undesirable or unsure. In the tables at the end of this section, the percentage distributions within each group on both criteria for each outcome are presented. Next, on the basis of actual numerical scores a mean score for each group for each outcome .as calculated and a t-test of significance was computed to determine whether the inter-group differences could be attributed to chance or were indeed non-random. Finally, the means for each outcome were rank ordered within groups in order to indicate the extent of convergence in the intensity of the assessments between the two groups. The RO coefficient in each of the tables is the measure used to indicate this convergence and may be interpreted as indicating physician and student assessments of the likelihood and desirability of that particular outcome compared to the other 31 outcomes used. A RO coefficient of 32 means that the group in question has, collectively, indicated that the outcome in question is most likely and/or desirable; a RO coefficient of 1 indicates that the outcome has been rated as least likely and/or desirable.

To test for covariation in these rank-ordered responses across the two groups, a Spearman rank-order correlation was computed. The coefficient for the likelihood criterion was .66 and that for the desirability criterion was .50, both of which are significant at the .01 level. These findings indicate that students and physicians both tended to see the potential outcomes of the program in roughly similar ways. As such, it could be predicted that divergence in perceptions of program outcomes would not be a particularly important source of potential conflict between categories of participants at the outset of the program. It should be pointed out, however, that the magnitude of the correlations does not indicate total agreement; in fact, the amount of explained variance is rather small. Thus while these findings demonstrate that there was a statistically significant amount of agreement between the ratings of the two parties, it was felt that further analysis was called for. Some rather interesting findings of a more specific nature that are not evident in the aggregate correlational analysis will be discussed below.

Of interest in the first place is the issue of where differences between the groups did occur. In this regard, the results of the t-tests on each criterion for each outcome are relevant. Significant differences between students and physicians were found for 11 of the 32 outcomes on at least one of the two criteria. In three cases there were significant differences on both criteria. These differences and their potential import for the program as a whole will be discussed in order below.*

#3. Students saw the posibility that multiple demands on their time might prevent them from absorbing sufficient knowledge to pass first-year comprehensive exams as significantly less desirable than did the physicians, although neither group saw this as a highly likely outcome. It should be noted that both groups saw this outcome as generally undesirable; however, all students saw it as highly undesirable, while some physicians were unsure and a few even thought it was somewhat desirable. The difference in orientations here appears to be a function of the stake each set of actors has in the outcome. Failure to pass the comprehensive affects the students much more directly than it does the physician.

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* The number in the margin refers to the number of the question found in Tables 6-37 on pages to .

#4. Physicians saw the possibility that friction might develop between paramedical personnel and themselves as significantly less likely than did the students, while all students saw this outcome as undesirable. This finding is interesting in that the students, apparently enthusiastic about the prospect of having clinical experience in their first year of medical school, were more worried about the consequences of this experience on support personnel than were the physicians. Since it could be argued that physicians might, by virtue of their experience, be better able to judge the impact of the presence of medical students in a clinical setting, one might expect students' perceptions to move toward those of the physician over time. Further, the finding suggests that the students should be reassured early in the program that their presence will not be aversive.

#6. Students saw the possibility that physicians would be motivated to maintain continuing education as a consequence of the program as significantly less likely than the physicians themselves, and although both groups saw this outcome as desirable, the physicians saw it as significantly more desirable than did the students. Of particular importance here is not so much the difference between the two groups as the fact that 92% of the physicians anticipated that there would be positive motivational constraints to pursue continuing education as a consequence of the program. Although this issue is dealt with in more detail in a later section of this report, it should be noted here that as trends toward regular testing as a prerequisite for maintaining medical licenses increase, mechanisms for enhancing the continuing education opportunities for practicing physicians will have to be sought. The findings presented here suggest that involvement of practicing physicians in medical education may be one such mechanism. At the very least, that is, to interpret these results most conservatively, practicing physicians appear to react positively to the idea.

#9. The physicians saw increased visibility for themselves beyond the immediate area as a significantly more desirable outcome than did the students. While neither group saw this outcome as particularly undesirable, students were more ambiguous about its desirability. In a program such as this which relies on voluntary participation, non-monetary rewards are often assumed to play a particularly important role in determining rates of participation and levels of satisfaction. What is interesting about this particular question is that, while increased visibility could be construed to be one form of non-monetary reward to be gained from participation, local physicians responded least intensely to it compared to the other thirty-one. (RO coefficient = 1)

While there are many physicians who see the outcome as desirable, the 38 per cent who are unsure about its desirability suggests that differential reward structures may have to be developed to attract and hold physicians in a voluntary program. It is apparently questionable to assume that physicians as a group respond homogeneously to a given set of rewards.

#10. Physicians saw the possibility that more physicians might be attracted to the area who otherwise would not have come as both significantly more likely and significantly more desirable than did the students. The students were, by and large, less certain about the outcome than the physicians. Of particular interest is the fact that no students saw the outcome as desirable while some physicians did, and that while the physicians saw the outcome as significantly more desirable than the students, the intensity of their feelings was low relative to the other thirty-one questions (RO coefficient = 4). This suggests that the possibility was somewhat threatening to at least some physicians and that this is a possible consequence which should be carefully examined, particularly in an area which is not characterized by obvious shortages of medical manpower. A program which relies heavily on the voluntary participation of physicians cannot afford to alienate an appreciable number of them.

#12. Students saw the possibility that the quality of their education might be poorer than in traditional programs as significantly less likely than did the practicing physicians, although neither group saw this outcome as desirable. It should also be noted that this issue was much more salient to the students (RO coefficient for likelihood = 29) than it was to the physicians (RO coefficient = 12). The students were apparently minimizing the possibility of an aversive (dissonance reduction), while the physicians were adopting a wait-and-see attitude.

#19. Physicians saw the possibility that physicians produced by the program might leave the state to practice elsewhere as significantly less undesirable than did the students. It should be noted that both groups were highly uncertain about how likely this outcome was and that more than half of the students were unsure of just how desirable or undesirable it was. The state of Illinois has recognized for some time that the flow of Illinois-trained doctors to other states for practice constitutes a serious problem from a health manpower point of view. It is not surprising that doctors in the area of this program would see this as an important issue. What is interesting, however, is the general unwillingness of the student to commit themselves on the issue. Presumably because most of them had not as yet made a decision about where they would ultimately practice, they did not want to preclude the possibility of practicing outside the state and therefore adopted a neutral position on the issue. What this finding suggests in a policy sense is that most of the students had not made location of practice decisions prior to entering medical school and that inducements to practice within the state might be usefully offered at this point in their medical careers.

#20. Physicians saw the possibility that the program would motivate them to continually review basic sciences as significantly more likely than did the students. Both groups saw this outcome as highly desirable. This response is consistent with the responses to the continuing education question discussed earlier and the interpretation of its importance is similar. Because physicians tended to see this outcome as both likely and desirable, it is not likely that it would be strongly resisted as a mechanism designed to impact on their continuing education.

#24. Physicians saw the possibility that they would become more aware of recent medical literature as significantly more likely and significantly more desirable than did the students. Of interest is the fact that the desirability of this outcome was much more salient to the physicians (RO coefficient = 26.5) than to the students (RO coefficient = 9.5) in spite of the fact that both groups saw it as desirable. It appears that practicing physicians are well aware of the problem of currency and maintenance of skills and are receptive - at least at the conceptual level - to programs which will help them deal with it.

#25. Physicians saw the possibility that existing health care services would be broadened as a consequence of the program as significantly more likely than the students. While both groups saw this outcome as highly desirable, half of the students were uncertain of how likely it was. Interestingly, neither group saw this as a particularly salient outcome in terms of desirability, although it was more salient to the students (RO coefficient = 17) than it was to the physicians (RO coefficient = 13.5). Given the widely disseminated notion that the medical student of the 1970's is different from the 1950's with respect to the level of development of his social consciousness, one might have expected a much wider discrepancy on the saliency issue. One might expect that the student would believe it much more desirable than the "status quo" physician to broaden existing health care services. Such was not the case in this group, however, although there is no way of knowing whether this is because the students were more "conservative" than they are generally thought to be or the physicians were more "liberal" than they are generally thought to be or both.

#30. Physicians saw the possibility that program related activities might take up too much of their time as significantly more likely than did students. In addition, this was the most salient outcome in terms of the cognitive orientation of the physicians. That the students and physicians diverge in their cognitive orientations to this issue is important, particularly since participation of the physicians is voluntary. If this divergence in orientation does not decrease in magnitude over time, one would expect this to be probable trouble spot in the program. To the extent that the student realizes that the physician is concerned about time and is able to adjust his behavior and/or demands accordingly, or to the extent that the physician - once he has had experience with the program - becomes less concerned about time the probability of this issue creating a major problem for the program is reduced.

A second kind of question that was asked had to do with group perceptions of most salient outcomes. It was felt that it might be illuminating to examine the extent to which there was overlap between the student and physician assessments of the five most and least likely outcomes and the five most and least desirable outcomes. The correlational analysis indicates that over all 32 outcomes there was considerable consistency in the relative rankings of their likelihood and desirability; however, it is also important to examine the consistency at the extremes. Table 1 presents the five outcomes that students and physicians rated as most and least likely.

TABLE 1

SALIENCY OF OUTCOMES -- LIKELIHOOD

STUDENTS	PHYSICIANS
(MOST LIKELY)	(MOST LIKELY)
1. (#1) student motivation higher	1. (#17) more student practical knowledge
2. (#17) more student practical knowledge	2. (#6) physicians will be motivated re continuing education.
3. (#11) will be closer student-physician relationship	3. (#8) calibre of medicine will improve
4. (#16) students will achieve more patient understanding, etc.	4. (#11) will be closer student-physician relationship
5. (#2) highly qualified medical students will be attracted.	5. (#1) student motivation higher
(LEAST LIKELY)	(LEAST LIKELY)
1. (#12) the quality of student's education may be poorer than in traditional programs	1. (#4) friction may develop between paramedical personnel and students
2. (#32) a financial drain on the state will be produced	2. (#32) a financial drain will be produced
3. (#18) physicians may eventually become bored doing same things over again	3. (#3) multiple demands on time will prevent students from passing first-year comprehensive exams
4. (#27) strong competition might develop between practicing physicians and academic physicians over controls	4. (#18) physicians may eventually become bored doing same things over again
5. (#3) multiple demands on time will prevent students from passing first-year comprehensive exams	5. (#12) the quality of students' education may be poorer than in traditional programs

The cognitive orientations of both groups at the positive extreme showed some interesting differences. While three of the five outcomes rated as most likely were the same for both groups, two were not. The students felt that it was highly likely that they would achieve more patient understanding and that highly qualified medical students would be attracted to the program; physicians felt that it was highly likely that they would be highly motivated to maintain their continuing education and that the calibre of their medicine would improve as a consequence of the program. Both groups agreed that students would be more highly motivated, that they would gain more practical knowledge by being exposed to patients earlier in their education and that there would be a closer student-physician relationship than in traditional programs. There was more agreement about which outcomes were least likely. Both groups agreed on four out of five items. Interestingly, though, the outcome deemed least likely by the physicians did not appear among the five deemed unlikely by the students. The physicians felt it was highly unlikely that friction would develop between para-medical personnel and the students. To examine the congruence in affective orientation of both groups at the extremes the five most and least desirable outcomes were identified and are presented in Table 2 on the following page.

TABLE 2

SALIENCY OF OUTCOMES -- DESIRABILITY

Students (Most Desirable)	Physicians (Most Desirable)
1. (#16) students will achieve more understanding, involvement and respect for the patient	1. (# 6) physicians will be motivated to maintain continuing education
2. (# 7) better medical facilities will be developed	2. (# 8) the calibre of medicine will be improved because teaching will add to the physician's knowledge
3. (#11) a closer student-physician relationship will be created than exists in traditional programs	3. (# 7) better medical facilities will be developed
4. (#17) students will gain more practical knowledge sooner by being able to examine patients earlier in their education	4. (#16) students will achieve more understanding, involvement and respect for the patient
5.* (# 8) the calibre of medicine will be improved because teaching will add to the physician's knowledge (#15) students will raise questions and provide feedback to physicians which might improve medical practice	5.*(#15) students will raise questions and provide feedback to physicians which might improve medical practice (#24) physicians will become more aware of recent medical literature (#23) physicians will be more aware of "why" they are doing things

Students (Least Desirable)	Physicians (Least Desirable)
1. (#12) the quality of student's education may be poorer than in traditional programs	1. (#12) the quality of student's education may be poorer than in traditional programs
2. (#28) patients might feel like guinea pigs	2. (#18) physicians may eventually become bored doing the same things over again
3. (#13) some students' practical experience will be impaired by lack of physician teaching ability	3. (#28) patients will feel like guinea pigs
4. (# 4) friction may develop between para-medical personnel and the students	4. (# 4) friction may develop between para-medical personnel and students
5.*(#21) there will be problems in "lining up" a sufficient range of patient illnesses (# 3) multiple demands on student time will prevent them from passing first year comprehensive exams	5. (#27) strong competition might develop between practicing physicians and academic physicians over control

* More than one item is presented because of tied ranks.

The data presented in Table 2 indicate that there were some interesting differences in the affective orientations of the two groups at the positive extremes. Four of the six items were similar in both groups, although the rankings differed. The outcome rated as most desirable by the physicians -- the motivation to maintain continuing education -- was not among the most desirable outcomes as rated by the students. In addition, the physicians felt that their becoming aware of the recent medical literature and their becoming more aware of "why" they were doing things were very highly desirable while these outcomes were not among those rated as most desirable by the students. On the other hand, the students felt that the possibility of a closer student-physician relationship and the early exposure to patients were both highly desirable, while these outcomes were not among those rated as most desirable by the physicians. As was the case with the likelihood dimension, it appears that where there is divergence at the positive extremes, it occurs in relation to outcomes that are seen as advantaging the group advocating them. In other words, there is a certain degree of instrumentality underlying the assessments of program outcomes on the part of both groups. While this finding is not surprising, it does suggest that, from an administrative point of view it is highly advisable to stress those aspects of the program which provide joint pay-offs to participants. To the extent that one group sees the possibility of certain outcomes advantaging another group at their own expense, the likelihood of conflict is increased.

At the negative extremes of the affective orientations of the two groups there is less convergence than at the positive extremes. In contrast to the positive extremes, both groups agreed that the possibility that the students' education might be poorer than in traditional programs was the least desirable outcome of all. But here the convergence ended. While both groups felt that the possibility that patients might feel like guinea pigs was among the least desirable outcomes, the pattern in divergence was approximately the same as that described above. The other three items rated as least desirable by the students all reflected personal costs; two out of the other three items rated as least desirable by the physicians reflected personal costs. What emerges, there is a picture of overall similarity in assessment of outcomes between the two groups but some variability within which reflects instrumental concerns and which suggest areas of caution to program administrators.

It is also interesting to compare the assessments of the extreme values of likelihood and desirability within groups. For example, the physicians rate the possibility that a closer student-physician relationship will be created than exists in traditional programs as among the five most likely outcomes. Given that this item appears on the students lists of both most likely and most desirable outcomes, an obvious question arises: what is likely to be the result when student assessments of this critical component of the program are somewhat at variance with those of the physician? Who is going to have to adjust? What can be done to facilitate the adjustment? On the other hand, everyone seems to feel that the possibility that the quality of the students' education may be poorer than in traditional programs is both unlikely and undesirable. While it is not possible to discuss these kinds of comparisons at greater length here, it should be noted by way of summary that there is less than 50 percent overlap between assessments of likelihood and desirability at the positive and negative extremes. These areas of divergence cannot be omitted from consideration in any analysis of the impact of initial conditions on subsequent processes.

While these differences are readily apparent, it should be noted that there was no instance in which an outcome rated at the positive extreme by one group (i.e. most desirable, most likely) was rated at the opposite extreme by the other group (i.e. least desirable, least likely). Thus, the difference themselves between the two groups are not extreme. The cognitive and affective orientations of both groups are reasonably similar, a finding which is particularly interesting since the two had had no contact at the time the data were collected.

One further set of analyses of the attitudes and beliefs of the physicians and students was undertaken to supplement those described above. Even a cursory examination of Tables 6-37 reveals that there was a large amount of variability between groups and between questions in the proportion of respondents who indicated that they were unsure of their cognitive and affective orientations. In some cases there was widespread uncertainty regarding both the likelihood and desirability of the outcomes on the part of both groups; in some cases one group was more unsure than another; in some cases neither was unsure.

Since the program itself is new, and since neither group had any direct experience with it, it was felt that a brief analysis of the patterns of uncertainty was appropriate. Not only would it be helpful from an administrative point of view to be aware of where major areas of uncertainty lay, it would also be important to follow the assessments of the participants over time in order to determine areas of convergence and divergence.

A variety of analyses was performed. First, the question of degree of certainty was examined. It was found that neither group was certain about the likelihood of the various outcomes. The single exception was that all of the students were sure that it was likely that they would gain more practical knowledge sooner by being able to examine patients earlier in their education (outcome #17). At the cognitive level, therefore, it can be argued that, given the program's newness a degree of uncertainty about what to expect obtained within both groups. On the affective level, however, there were some striking differences between the groups. No student was unsure about the desirability of an outcome in 16 cases (outcomes #3, 4, 6, 7, 8, 11, 12, 13, 15, 20, 21, 23, 24, 25, 28, 30). In no case was there an absence of physician uncertainty about the desirability of an outcome. This finding suggests that, as a group, the students were generally more disposed to commit themselves to an affective position than were the physicians. In one sense, this result could be a reflection of the relatively idealistic outlook of students in general.

The next several analyses were based on patterns of uncertainty. For each group, it was decided that a potentially important amount of uncertainty existed if 10 percent or more of the members replied that they were unsure about the likelihood and/or desirability of a given outcome. Since there was a relatively small number of students, this operationalization, in effect, means that for an outcome to be defined as having a noticeable amount of uncertainty associated with it more than one student has to have responded that he was unsure. For the physicians, 12 or more had to respond that they were unsure in order that a particular outcome be included in this analysis.

Considering the cognitive orientations of both groups first, in 26 out of 32 cases 10 percent or more of the students were uncertain about how likely the outcome was. Interestingly, the number of cases in which 10 percent or more of the physicians were unsure about the likelihood of an outcome was the same, twenty-six. In the discussion of certainty above, it was pointed out that in no case was not at least one physician unsure about his cognitive orientation and in only one case was not at least one student unsure.

Thus, in the vast majority of the cases (81% for each group) both groups exhibited a reasonably widespread amount of cognitive uncertainty. Further, in 20 cases (63% of total) ten percent or more of the members of each group exhibited uncertainty about the likelihood of the same outcome. It seems reasonable to conclude, therefore, that cognitive uncertainty in assessment of program outcomes was not the particular province of either group.

To pursue this issue further, the level of uncertainty was examined in more detail. Given that cognitive uncertainty was widespread, the question of whether there were differences between the groups in level of uncertainty arose. As one means of examining this question, outcomes were classified on the basis of whether 10 to 24 percent of either group was unsure, 25-49 percent, and half or more. The results of this analysis are presented in Table 3 below.

TABLE 3

LEVEL OF COGNITIVE UNCERTAINTY ABOUT PROGRAM CONSEQUENCES

		Students	Physicians
Percent	10-24%	9	15
Unsure	25-49%	11	11
	≥ 50%	6	0

N=52

df=2

$x^2=7.67$

$p > .05$

The data in Table 3 indicates that level of uncertainty is not independent of group affiliation. were more likely than physicians to be more uncertain about cognitive orientations. In other words, there was a significantly greater extent of uncertainty among students about the likelihood of program outcomes than among physicians, even though uncertainty was present in both groups.

Shifting attention to the affective orientations of the groups, it was found that ten percent or more of the students were uncertain about the desirability of outcomes in 10 cases, while the comparable figure for the physician was 15 cases. Both groups were uncertain about the same outcome in 9 cases, which indicates a high degree of shared perception between them. In 9 out of the 10 cases in which ten percent or more of the students were unsure about the desirability of a given outcome, ten percent or more of the physicians were unsure as well.

To examine the levels of uncertainty, the same procedure was followed as above. The results of this procedure are presented in Table 4.

TABLE 4

LEVEL OF AFFECTIVE UNCERTAINTY ABOUT PROGRAM CONSEQUENCES

		Group	
		Student	Physician
Percent	10-24%	4	13
Unsure	25-49%	4	2
	≥ 50%	2	0

N=25
df=2
x^2=6.8
p > .01

As was the case with the cognitive orientations of the two groups, the results presented in table 4 indicate that affective orientation is not independent of group affiliation. In those instances in which students were unsure--and there were many fewer in number than was the case with their cognitive orientations--the level of uncertainty tended to be higher than that of the physicians.

Of interest too was the question of what, if any, outcomes were sources of uncertainty for both groups on both criteria. Table 5 below included those outcomes the likelihood and desirability of which ten percent or more of both groups were unsure of.

TABLE 5

UNCERTAIN OUTCOMES FOR BOTH GROUPS ON BOTH CRITERIA

(#2) Highly qualified medical students will be attracted

(#9) Champaign County physicians will become more "visible" to physicians elsewhere

(#10) More physicians will be attracted to the area who otherwise would not have come

(#19) Physicians produced by the program will leave the state to practice elsewhere

(#26) Small town practices will be encouraged

(#29) Others (i.e. nurses, technicians) may be induced to introduce and participate in new methods of medical education in their own fields

(#31) Patients will gain insights into the complexities of medical education

(#32) A financial drain on the state will be produced.

The outcomes about which widespread uncertainty exists appear to share a common dimension. None of them relate directly to the program itself with the possible exception of (#2). Cognitive and affective uncertainty for both groups emerges on those consequences which do not have to do directly with the operation of the program and which have relatively long feedback cycles associated with them. No one will be in a position to know whether small town practices will be encouraged as a consequence of the program, for example, for a number of years.

1.3 Summary

To summarize the findings regarding the assessments of potential participants of consequences of the new program briefly, it may be stated that, overall, there was a reasonably high degree of similarity in the cognitive and affective orientations of both physicians and students toward program outcomes. The rank order correlations on the likelihood and desirability assessment criteria between the two groups were .66 and .50 respectively. Looking at the five outcomes deemed most desirable, least desirable, most likely and least likely by the two groups, there was no instance in which an outcome rated "most" by one group was rated "least" by the other.

Areas of divergence between the two groups were examined because it was noted that the assessments of the groups were by no means isomorphic. Significant differences were found in eleven cases, and each case was reviewed and the implications of the differences were discussed. The analysis of the saliency of the outcomes to the two groups revealed that each group tended to assess on the basis of instrumentality, that is, to see those outcomes as most salient which affected them personally. Concerning the degree of uncertainty in orientations, it was found that cognitive uncertainty was widespread in both groups but that the level of this uncertainty was significantly higher for students than for physicians. Much less uncertainty was found in the affective orientations of the two groups. The students, in fact, were much more certain, in general, of the desirability of program outcomes than were the physicians. However, where uncertainty did exist, its level was significantly higher for students than for physicians. Where both cognitive and affective uncertainty was present on a given outcome for both groups, it was found that the outcomes themselves tended to be removed from the direct operation of the program itself and to have relatively long feedback cycles associated with them.

TABLE 6

ITEM # 1

OUTCOME

Students will be better motivated because they can see the importance of "classroom" knowledge in their practical experience.

ASSESSMENT OF LIKELIHOOD

Students	**Physicians**
94 % L	85 % L
6 % UL	8 % UL
% Unsure	7 % Unsure
6.3 $\bar{x}$ Score	5.7 $\bar{x}$ Score
31.5 RO Coefficient	28.0 RO Coefficient

ASSESSMENT OF DESIRABILITY

Students	**Physicians**
88 % D	92 % D
6 % UD	1 % UD
6 % Unsure	7 % Unsure
6.1 $\bar{x}$ Score	6.3 $\bar{x}$ Score
23.5 RO Coefficient	24.5 RO Coefficient

TABLE 7

ITEM # 2

OUTCOME

Highly qualified medical students will be attracted.

ASSESSMENT OF LIKELIHOOD

Students	Physicians
75 % L	85 % L
____ % UL	12 % UL
25 % Unsure	26 % Unsure
5.6 $\bar{x}$ Score	4.8 $\bar{x}$ Score
28.5 RO Coefficient	16.5 RO Coefficient

ASSESSMENT OF DESIRABILITY

Students	Physicians
81 % D	86 % D
____ % UD	3 % UD
19 % Unsure	11 % Unsure
5.7 $\bar{x}$ Score	6.2 $\bar{x}$ Score
5.5 RO Coefficient	22.5 RO Coefficient

TABLE 8

ITEM # 3

OUTCOME

The many demands on their time will prevent students from absorbing sufficient knowledge to pass first year comprehensive exams.

ASSESSMENT OF LIKELIHOOD

Students		Physicians	
13	% L	17	% L
54	% UL	57	% UL
33	% Unsure	26	% Unsure
2.9	$\bar{x}$ Score	2.9	$\bar{x}$ Score
5.0	RO Coefficient	3.0	RO Coefficient

ASSESSMENT OF DESIRABILITY[*]

Students		Physicians	
	% D	9	% D
100	% UD	72	% UD
	% Unsure	21	% Unsure
1.6	$\bar{x}$ Score	2.4	$\bar{x}$ Score
5.5	RO Coefficient	10.0	RO Coefficient

[*] t = 1.98
df = 118
p .05

TABLE 9

ITEM # 4

OUTCOME

Friction may develop between paramedical personnel and the students.

ASSESSMENT OF LIKELIHOOD*

Students		Physicians	
6	% L	15	% L
38	% UL	71	% UL
56	% Unsure	14	% Unsure
3.5	$\bar{x}$ Score	2.7	$\bar{x}$ Score
6.0	RO Coefficient	1.0	RO Coefficient

ASSESSMENT OF DESIRABILITY

Students		Physicians	
	% D	3	% D
100	% UD	83	% UD
	% Unsure	14	% Unsure
1.5	$\bar{x}$ Score	1.9	$\bar{x}$ Score
4.0	RO Coefficient	4.5	RO Coefficient

*$t = 1.98$
$df = 118$
$p \quad .05$

TABLE 10

ITEM # 5

OUTCOME

Evaluative information on performance (feedback) will be provided to both students and physicians by others in the program.

ASSESSMENT OF LIKELIHOOD

Students	Physicians
82 % L	68 % L
12 % UL	7 % UL
6 % Unsure	25 % Unsure
5.2 $\bar{x}$ Score	5.1 $\bar{x}$ Score
26.0 RO Coefficient	20.0 RO Coefficient

ASSESSMENT OF DESIRABILITY

Students	Physicians
75 % D	77 % D
6 % UD	5 % UD
19 % Unsure	18 % Unsure
5.8 $\bar{x}$ Score	5.6 $\bar{x}$ Score
18.5 RO Coefficient	16.0 RO Coefficient

TABLE 11

ITEM # 6

OUTCOME

Physicians will be motivated to maintain continuing education.

ASSESSMENT OF LIKELIHOOD*

Students		Physicians	
68	% L	92	% L
13	% UL	3	% UL
19	% Unsure	5	% Unsure
4.9	$\bar{x}$ Score	5.9	$\bar{x}$ Score
22.5	RO Coefficient	30.5	RO Coefficient

ASSESSMENT OF DESIRABILITY**

Students		Physicians	
100	% D	100	% D
	% UD		% UD
	% Unsure		% Unsure
6.1	$\bar{x}$ Score	6.7	$\bar{x}$ Score
23.5	RO Coefficient	32.0	RO Coefficient

---

*t = 2.80
df = 118
p .01

**t = 3.05
df = 118
p .01

TABLE 12

ITEM # 7

OUTCOME

Better medical facilities will be developed.

ASSESSMENT OF LIKELIHOOD

Students		Physicians	
69	% L	78	% L
6	% UL	11	% UL
25	% Unsure	11	% Unsure
5.0	$\bar{x}$ Score	5.4	$\bar{x}$ Score
25.0	RO Coefficient	22.5	RO Coefficient

ASSESSMENT OF DESIRABILITY

Students		Physicians	
100	% D	98	% D
	% UD	2	% UD
	% Unsure	2	% Unsure
6.5	$\bar{x}$ Score	6.5	$\bar{x}$ Score
31.0	RO Coefficient	29.5	RO Coefficient

TABLE 13

ITEM # 8

OUTCOME

The calibre of medicine will be improved because teaching will also add to the physician's knowledge.

ASSESSMENT OF LIKELIHOOD

Students		Physicians	
81	% L	90	% L
6	% UL	5	% UL
13	% Unsure	5	% Unsure
5.4	$\bar{x}$ Score	5.9	$\bar{x}$ Score
27.0	RO Coefficient	30.5	RO Coefficient

ASSESSMENT OF DESIRABILITY

Students		Physicians	
100	% D	97	% D
	% UD	2	% UD
	% Unsure	1	% Unsure
6.3	$\bar{x}$ Score	6.6	$\bar{x}$ Score
27.5	RO Coefficient	31.0	RO Coefficient

TABLE 14

ITEM # 9

OUTCOME

Champaign County physicians will become more "visible" to physicians elsewhere.

ASSESSMENT OF LIKELIHOOD

Students	Physicians
31 % L	54 % L
19 % UL	22 % UL
50 % Unsure	24 % Unsure
4.1 $\bar{x}$ Score	4.5 $\bar{x}$ Score
12.5 RO Coefficient	13.5 RO Coefficient

ASSESSMENT OF DESIRABILITY*

Students	Physicians
25 % D	59 % D
6 % UD	3 % UD
69 % Unsure	38 % Unsure
4.2 $\bar{x}$ Score	5.2 $\bar{x}$ Score
12.0 RO Coefficient	12.0 RO Coefficient

*$t = 3.06$
$df = 118$
p .01

TABLE 15

ITEM # 10

OUTCOME

More physicians will be attracted to the
area who otherwise would not have come.

ASSESSMENT OF LIKELIHOOD*

Students	Physicians
31 % L	58 % L
25 % UL	18 % UL
44 % Unsure	24 % Unsure
4.1 $\bar{x}$ Score	4.8 $\bar{x}$ Score
12.5 RO Coefficient	16.5 RO Coefficient

ASSESSMENT OF DESIRABILITY**

Students	Physicians
69 % D	72 % D
% UD	7 % UD
31 % Unsure	21 % Unsure
4.8 $\bar{x}$ Score	5.5 $\bar{x}$ Score
13.0 RO Coefficient	13.5 RO Coefficient

*t = 1.99
df = 118
p .05

**t = 1.98
df = 118
p .05

TABLE 16

ITEM # 11

OUTCOME

A closer student-physician relationship will be created than exists in traditional programs.

ASSESSMENT OF LIKELIHOOD

Students		Physicians	
94	% L	89	% L
	% UL	8	% UL
6	% Unsure	3	% Unsure
6.2	$\bar{x}$ Score	5.8	$\bar{x}$ Score
30.0	RO Coefficient	29.0	RO Coefficient

ASSESSMENT OF DESIRABILITY

Students		Physicians	
100	% D	94	% D
	% UD		% UD
	% Unsure	6	% Unsure
6.4	$\bar{x}$ Score	6.3	$\bar{x}$ Score
29.5	RO Coefficient	24.5	RO Coefficient

TABLE 17

ITEM #12

OUTCOME

The quality of students' education may be poorer than in traditional programs.

ASSESSMENT OF LIKELIHOOD*

Students		Physicians	
6	% L	23	% L
81	% UL	56	% UL
13	% Unsure	21	% Unsure
2.3	$\bar{x}$ Score	3.3	$\bar{x}$ Score
1.0	RO Coefficient	4.5	RO Coefficient

ASSESSMENT OF DESIRABILITY

Students		Physicians	
	% D	2	% D
100	% UD	90	% UD
	% Unsure	8	% Unsure
1.2	$\bar{x}$ Score	1.6	$\bar{x}$ Score
1.5	RO Coefficient	1.5	RO Coefficient

*$t = 2.03$
$df = 118$
$p \quad .05$

TABLE 18

ITEM # 13

OUTCOME

Some students' practical experience will not be as fruitful as possible because some physicians don't have sufficient teaching ability.

ASSESSMENT OF LIKELIHOOD

Students		Physicians	
32	% L	53	% L
43	% UL	23	% UL
25	% Unsure	24	% Unsure
3.7	$\bar{x}$ Score	4.5	$\bar{x}$ Score
7.5	RO Coefficient	13.5	RO Coefficient

ASSESSMENT OF DESIRABILITY

Students		Physicians	
	% D	59	% D
100	% UD	86	% UD
	% Unsure	9	% Unsure
1.4	$\bar{x}$ Score	2.0	$\bar{x}$ Score
3.0	RO Coefficient	6.5	RO Coefficient

TABLE 19

ITEM # 14

OUTCOME

More highly qualified physicians (higher scores on state board exams) will be produced.

ASSESSMENT OF LIKELIHOOD

Students	Physicians
31 % L	23 % L
19 % UL	34 % UL
50 % Unsure	43 % Unsure
4.1 $\bar{x}$ Score	3.8 $\bar{x}$ Score
12.5 RO Coefficient	8.5 RO Coefficient

ASSESSMENT OF DESIRABILITY

Students	Physicians
88 % D	70 % D
6 % UD	7 % UD
6 % Unsure	23 % Unsure
5.8 $\bar{x}$ Score	5.5 $\bar{x}$ Score
18.5 RO Coefficient	13.5 RO Coefficient

TABLE 20

ITEM # 15

OUTCOME

Students will raise questions and provide feedback to physicians which might alter and improve medical practices.

ASSESSMENT OF LIKELIHOOD

Students		Physicians	
74	% L	84	% L
13	% UL	8	% UL
13	% Unsure	8	% Unsure
4.8	$\bar{x}$ Score	5.5	$\bar{x}$ Score
20.5	RO Coefficient	25.5	RO Coefficient

ASSESSMENT OF DESIRABILITY

Students		Physicians	
100	% D	96	% D
	% UD		% UD
	% Unsure	4	% Unsure
6.3	$\bar{x}$ Score	6.4	$\bar{x}$ Score
27.5	RO Coefficient	26.5	RO Coefficient

TABLE 21

ITEM # 16

OUTCOME

Students will achieve more involvement, understanding, and respect for the patient.

ASSESSMENT OF LIKELIHOOD

Students	Physicians
88 % L	82 % L
6 % UL	4 % UL
6 % Unsure	14 % Unsure
5.6 x̄ Score	5.5 x̄ Score
28.5 RO Coefficient	25.5 RO Coefficient

ASSESSMENT OF DESIRABILITY

Students	Physicians
94 % D	97 % D
____ % UD	____ % UD
6 % Unsure	3 % Unsure
6.8 x̄ Score	6.5 x̄ Score
32.0 RO Coefficient	29.5 RO Coefficient

TABLE 22

ITEM # 17

OUTCOME

Students will gain more practical knowledge sooner by being able to examine patients earlier in their education.

ASSESSMENT OF LIKELIHOOD

Students		Physicians	
100	% L	91	% L
	% UL	4	% UL
	% Unsure	5	% Unsure
6.3	$\bar{x}$ Score	6.0	$\bar{x}$ Score
31.5	RO Coefficient	32.0	RO Coefficient

ASSESSMENT OF DESIRABILITY

Students		Physicians	
94	% D	84	% D
	% UD	2	% UD
6	% Unsure	14	% Unsure
6.4	$\bar{x}$ Score	6.0	$\bar{x}$ Score
29.5	RO Coefficient	19.5	RO Coefficient

TABLE 23

ITEM # 18

OUTCOME

Physicians may eventually become bored doing the same things over again, such as teaching new medical students.

ASSESSMENT OF LIKELIHOOD

Students	Physicians
6 % L	27 % L
88 % UL	54 % UL
6 % Unsure	19 % Unsure
2.7 $\bar{x}$ Score	3.3 $\bar{x}$ Score
3.0 RO Coefficient	4.5 RO Coefficient

ASSESSMENT OF DESIRABILITY

Students	Physicians
% D	2 % D
94 % UD	92 % UD
6 % Unsure	6 % Unsure
1.7 $\bar{x}$ Score	1.6 $\bar{x}$ Score
7.5 RO Coefficient	1.5 RO Coefficient

TABLE 24

ITEM # 19

OUTCOME

Participating physicians produced by the program will leave the state to practice elsewhere.

ASSESSMENT OF LIKELIHOOD

Students		Physicians	
13	% L	16	% L
18	% UL	38	% UL
69	% Unsure	46	% Unsure
3.7	$\bar{x}$ Score	3.4	$\bar{x}$ Score
7.5	RO Coefficient	6.0	RO Coefficient

ASSESSMENT OF DESIRABILITY*

Students		Physicians	
6	% D	2	% D
38	% UD	62	% UD
56	% Unsure	26	% Unsure
3.3	$\bar{x}$ Score	2.2	$\bar{x}$ Score
11.0	RO Coefficient	9.0	RO Coefficient

---

*$t = 3.01$
$df = 118$
$p \quad .01$

TABLE 25

ITEM # 20

OUTCOME

The program will motivate physicians to continually review basic sciences.

ASSESSMENT OF LIKELIHOOD*

Students		Physicians	
56	% L	80	% L
19	% UL	10	% UL
25	% Unsure	10	% Unsure
4.4	$\bar{x}$ Score	5.3	$\bar{x}$ Score
16.0	RO Coefficient	21.0	RO Coefficient

ASSESSMENT OF DESIRABILITY

Students		Physicians	
100	% D	93	% D
	% UD	2	% UD
	% Unsure	5	% Unsure
5.9	$\bar{x}$ Score	6.1	$\bar{x}$ Score
21.5	RO Coefficient	21.0	RO Coefficient

---

*$t = 2.29$
$df = 118$
$p \quad .05$

TABLE 26

ITEM # 21

OUTCOME

There will be coordination problems in "lining up" a sufficient range of patients' illnesses for the student to study.

ASSESSMENT OF LIKELIHOOD

Students		Physicians	
63	% L	52	% L
28	% UL	32	% UL
19	% Unsure	16	% Unsure
4.5	$\bar{x}$ Score	4.3	$\bar{x}$ Score
17.5	RO Coefficient	12.0	RO Coefficient

ASSESSMENT OF DESIRABILITY

Students		Physicians	
	% D	14	% D
100	% UD	71	% UD
	% Unsure	15	% Unsure
1.6	$\bar{x}$ Score	2.5	$\bar{x}$ Score
5.5	RO Coefficient	11.0	RO Coefficient

TABLE 27

ITEM #22

OUTCOME

Teaching abilities of physicians will be improved.

ASSESSMENT OF LIKELIHOOD

Students		Physicians	
75	% L	78	% L
6	% UL	8	% UL
19	% Unsure	14	% Unsure
4.9	$\bar{x}$ Score	5.5	$\bar{x}$ Score
22.5	RO Coefficient	25.5	RO Coefficient

ASSESSMENT OF DESIRABILITY

Students		Physicians	
81	% D	93	% D
	% UD	2	% UD
19	% Unsure	5	% Unsure
5.6	$\bar{x}$ Score	6.2	$\bar{x}$ Score
16.0	RO Coefficient	22.5	RO Coefficient

TABLE 28

ITEM #23

OUTCOME

Physicians will be more aware of "why" they are doing things rather than just doing them out of habit (because they will be providing an example for the students).

ASSESSMENT OF LIKELIHOOD

Students		Physicians	
69	% L	79	% L
6	% UL	8	% UL
25	% Unsure	13	% Unsure
4.9	$\bar{x}$ Score	5.4	$\bar{x}$ Score
22.5	RO Coefficient	22.5	RO Coefficient

ASSESSMENT OF DESIRABILITY

Students		Physicians	
100	% L	94	% L
	% UL	2	% UL
	% Unsure	4	% Unsure
6.1	$\bar{x}$ Score	6.4	$\bar{x}$ Score
23.5	RO Coefficient	26.5	RO Coefficient

TABLE 29

ITEM #24

OUTCOME

Physicians will becomw more aware of recent medical literature.

ASSESSMENT OF LIKELIHOOD*

Students		Physicians	
69	% L	79	% L
6	% UL	5	% UL
25	% Unsure	16	% Unsure
4.8	$\bar{x}$ Score	5.4	$\bar{x}$ Score
20.5	RO Coefficient	22.5	RO Coefficient

ASSESSMENT OF DESIRABILITY**

Students		Physicians	
100	% D	94	% D
	% UD	2	% UD
	% Unsure	4	% Unsure
5.8	$\bar{x}$ Score	6.4	$\bar{x}$ Score
18.5	RO Coefficient	26.5	RO Coefficient

*t = 1.99
df = 118
p .05

**t = 2.27
df = 118
p .05

TABLE 30

ITEM # 25

OUTCOME

The existing health care services will be broadened even further.

ASSESSMENT OF LIKELIHOOD*

Students	Physicians
31 % L	67 % L
19 % UL	13 % UL
50 % Unsure	20 % Unsure
4.3 $\bar{x}$ Score	6.0 $\bar{x}$ Score
15.0 RO Coefficient	18.5 RO Coefficient

ASSESSMENT OF DESIRABILITY

Students	Physicians
100 % D	89 % D
____ % UD	5 % UD
____ % Unsure	6 % Unsure
6.1 $\bar{x}$ Score	6.0 $\bar{x}$ Score
23.5 RO Coefficient	19.5 RO Coefficient

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*$t = 1.98$
df = 118
p .05

TABLE 31

ITEM # 26

OUTCOME

Small town practices will be encouraged.

ASSESSMENT OF LIKELIHOOD

Students	Physicians
30 % L	30 % L
32 % UL	39 % UL
38 % Unsure	31 % Unsure
3.9 $\bar{x}$ Score	3.8 $\bar{x}$ Score
11.0 RO Coefficient	8.5 RO Coefficient

ASSESSMENT OF DESIRABILITY

Students	Physicians
69 % D	73 % D
____ % UD	6 % UD
31 % Unsure	21 % Unsure
5.5 $\bar{x}$ Score	5.7 $\bar{x}$ Score
15.0 RO Coefficient	17.0 RO Coefficient

TABLE 32

ITEM #27

OUTCOME

Strong competition might develop between practicing physicians and academic physicians for "control" of the student's program.

ASSESSMENT OF LIKELIHOOD

Students	Physicians
6 % L	29 % L
69 % UL	43 % UL
25 % Unsure	28 % Unsure
2.8 $\bar{x}$ Score	3.5 $\bar{x}$ Score
4.0 RO Coefficient	7.0 RO Coefficient

ASSESSMENT OF DESIRABILITY

Students	Physicians
____ % D	6 % D
94 % UD	83 % UD
6 % Unsure	11 % Unsure
1.7 $\bar{x}$ Score	1.9 $\bar{x}$ Score
21.5 RO Coefficient	4.5 RO Coefficient

TABLE 33

ITEM # 28

OUTCOME

Patients might feel like guinea pigs, or a certain brittleness might develop in some practices (i.e., in gynecology a patient might resent a young male as an observer).

ASSESSMENT OF LIKELIHOOD

Students	Physicians
69 % L	41 % L
18 % UL	40 % UL
13 % Unsure	19 % Unsure
4.6 $\bar{x}$ Score	3.8 $\bar{x}$ Score
19.0 RO Coefficient	8.5 RO Coefficient

ASSESSMENT OF DESIRABILITY

Students	Physicians
% L	2 % L
100 % UL	93 % UL
% Unsure	5 % Unsure
1.2 $\bar{x}$ Score	1.7 $\bar{x}$ Score
1.5 RO Coefficient	3.0 RO Coefficient

TABLE 34

ITEM # 29

OUTCOME

Others (i.e., nurses, technicians) may be induced to introduce and participate in new methods of medical education in their own fields.

ASSESSMENT OF LIKELIHOOD

Students	Physicians
44 % L	74 % L
6 % UL	9 % UL
50 % Unsure	17 % Unsure
4.5 $\bar{x}$ Score	5.0 $\bar{x}$ Score
17.5 RO Coefficient	18.5 RO Coefficient

ASSESSMENT OF DESIRABILITY

Students	Physicians
87 % L	84 % L
% UL	1 % UL
13 % Unsure	15 % Unsure
5.9 $\bar{x}$ Score	5.9 $\bar{x}$ Score
21.5 RO Coefficient	18.0 RO Coefficient

TABLE 35

ITEM #30

OUTCOME

Program-related activities may take up too much of the physician's time.

ASSESSMENT OF LIKELIHOOD*

Students		Physicians	
25	% L	65	% L
44	% UL	20	% UL
31	% Unsure	15	% Unsure
3.7	$\bar{x}$ Score	4.7	$\bar{x}$ Score
7.5	RO Coefficient	15.0	RO Coefficient

ASSESSMENT OF DESIRABILITY

Students		Physicians	
	% D	6	% D
100	% UD	87	% UD
	% Unsure	7	% Unsure
1.9	$\bar{x}$ Score	2.1	$\bar{x}$ Score
9.0	RO Coefficient	8.0	RO Coefficient

* $t = 2.37$
$df = 118$
p .02

TABLE 36

ITEM #31

OUTCOME

Patients will gain insight into the complexities of medical education.

ASSESSMENT OF LIKELIHOOD

Students		Physicians	
37	% L	37	% L
44	% UL	36	% UL
19	% Unsure	27	% Unsure
3.8	$\bar{x}$ Score	4.0	$\bar{x}$ Score
10.0	RO Coefficient	11.0	RO Coefficient

ASSESSMENT OF DESIRABILITY

Students		Physicians	
69	% L	71	% L
	% UL	6	% UL
31	% Unsure	23	% Unsure
5.2	$\bar{x}$ Score	5.5	$\bar{x}$ Score
14.0	RO Coefficient	13.5	RO Coefficient

TABLE 37

ITEM # 32

OUTCOME

A financial drain on the state will be produced.

ASSESSMENT OF LIKELIHOOD

Students		Physicians	
6	% L	10	% L
75	% UL	55	% UL
19	% Unsure	35	% Unsure
2.4	$\bar{x}$ Score	2.8	$\bar{x}$ Score
2.0	RO Coefficient	2.0	RO Coefficient

ASSESSMENT OF DESIRABILITY

Students		Physicians	
	% L	3	% L
56	% UL	79	% UL
44	% Unsure	18	% Unsure
2.5	$\bar{x}$ Score	2.0	$\bar{x}$ Score
10.0	RO Coefficient	6.5	RO Coefficient

2. Student Expectations of Roles of Selves and Physician Advisors (MDA's)*

2.1 Introduction

As noted above, it was felt that the attitudes, beliefs and expectations of program participants prior to initiation of the program were important both as indicators of areas of potential discord and as baselines against which to examine change and performance. In the following pages a brief descriptive analysis of the expectations of the students regarding their own roles and the roles of their physician advisors will be presented.** It should be noted that since the number of students enrolled in the program during the first year of its operation is small (N=16), the kinds of analyses that can be performed are limited. For this reason most of the results reported in this section are in terms of distributions. When the sample size is as small as 16, it is of questionable utility even to use contingency tables. With this constraint as a given, there are a number of observations that can be made about the student expectations of their own roles.

2.2 Analysis

Two different general kinds of expectations were elicited from the students. The first had to do with their expectations about medical school in general. Before the students were asked what their expectations actually were, they were asked to indicate the sources that influenced their conceptions of what medical school would be like. For each source listed they were asked to rank on a scale from 1 to 4 how important an influence on their conceptions it has been. Their responses are presented in Table 38.

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[*] Prepared with the assistance of Martin J. Mistretta.

[**] The instruments on which this section is based can be found in Appendices B.5 and B.6.

TABLE 38

FACTORS INFLUENCING PRE-PROGRAM CONCEPTIONS OF MEDICAL SCHOOL

N=16*	Very Important or Fairly Important	Of Minor Importance No Importance
Medical School Bulletins	44 %	50 %
Medical Students at the Urbana Campus	25 %	63 %
Medical Students at the Chicago Campus	32 %	63 %
Medical Students at Other schools	31 %	63 %
Members of your family who are doctors	25 %	76 %
Your family physician	31 %	63 %
Other Physicians who are friends	38 %	56 %
Medical School Faculty	50 %	44 %
College Faculty	31 %	63 %
Books, Movies, Plays	13 %	69 %

---

* Percentages are percent of total. Percent not answering are not presented in the table, but are reflected on the row totals.

It is evident from Table 38 that factors were somewhat specific for each individual; that is, no factors were universally important for all students. The most important sources of their conceptions were Medical School Faculty (50% considering them important) while the next most important source was Medical School Bulletins (44% giving them importance). Other physicians who were friends had a relatively high influence also (38% assigning them importance). Influences of least importance over all the students were family members who were doctors (76% assigning little or no importance to them) with books, movies and plays also of little importance (69% assigning little importance). This does mean that for specific individuals they were not important, however, overall it seems that after Medical School Faculty and Bulletins are consulted, individual situational influences came into play in the formation of student expectations prior to the beginning of the program.

To determine what the student expectations about medical school in general actually were, a variety of questions was asked. First, with respect to the amount of time they expected their studies to take they were asked:

> Compared to your undergraduate studies, how much time do you think your studies in your first year of medical school are going to take?

Responses were:		
	More time	88%
	Less time	0%
	Same amount of time	6%
	Don't know	6%

Thus students generally expected to spend a good deal of time with the books.

In regard to what they felt to be important in the way of skills that would be required, the following question was asked:

> In your opinion, how important is each of the following for a student to get the most out of the first year of medical school?

Students were asked to rate each item on a continuum of importance from high (7) to low (1). In Table 39 the mean scores for each item are reported.

TABLE 39

MEDICAL SKILLS REQUIRED--STUDENTS' EXPECTATIONS

	Mean Score (N=16)
Manual Dexterity (with instruments, etc.)	4.3
Ability to memorize	5.6
Ability to Cope with Theoretical Material	5.6
Previous Knowledge of Physical Science	5.0
Ability to put aside almost everything for your studies	4.1
Previous knowledge of social science	4.1
Getting along with other students	4.4
Ability to remain relaxes vs tense about work	5.9
Learning as many medical facts as possible	5.5
Making up your own mind about what to emphasize in your studying	5.1
Getting along with medical faculty	5.1
Ability to carry out research	3.2

Students generally thought science-study-related skills would be of the highest importance to their success in the first year of medical school. They cited ability to memorize (5.6 mean importance score), ability to cope with theoretical material (5.6), previous knowledge of physical science (5.0), ability to remain relaxed about work (5.9), learning as many medical facts as possible (5.5), making up their own mind about what to study (5.1) and getting along with medical faculty (5.1) as the most important skills while getting along with other students (4.4) and research ability (3.2) were given little importance.

Given the importance of performance in medical school, students were asked how well they thought they would do academically in relation to other students in the program. Replies were as follows:

19% expected to do considerably better than average

19% expected to do better than average

44% average

0% below average

19% don't know

Psychologically, then, the students were prepared for the challenge of performing. While some indicated that they were unsure, none felt that they would do poorly. Interestingly enough, none did do poorly as will be discussed in Program Outcomes.

One gets somewhat of an indication of the anxieties the students had about their future performances and the stress that would be involved in their educational experiences from the following items assessing what would be the more difficult aspects of medical school. These items were rated on a continuum from very difficult (1) to not difficult at all (7). Mean scores on the items are presented in Table 40.

TABLE 40

DIFFICULT ASPECTS OF MEDICAL SCHOOL--STUDENT EXPECTATIONS

	Mean Score (N=16)
Making friends in your class	6.4
Keeping up with other students	4.8
Learning what is expected of you	4.2
Adjustment to the sights and smells of the anatomy lab	6.3
Learning to think for yourself	6.4
Getting to know faculty members	5.8
Not becoming tense-nervous about your work	4.3

One can see from the table that learning what was expected of them, keeping up with other students and remaining relaxed about their work concerned them more than the other potential difficulties. Apparently, the students did not think that keeping up with other students would be an insurmountable source of difficulty because most of them felt that, as reported in the previous question, they would perform at or better than average.

A question which is related to the students' expectations about relative performance and the difficulties they might encounter in keeping up with other students has to do with their feelings about competitiveness in medical school. Traditionally, medical schools have the aura of institutions in which competition is unusually high, with consequences which are occasionally serious for the mental well-being of would-be physicians. To tap this group's feelings about competitive situations, they were asked to indicate their affective orientation toward them. In responding, they said the following:

25%	I dislike them and prefer to avoid them
25%	I dislike them somewhat
13%	I have neutral feelings about them
25%	I enjoy them somewhat
13%	I get a kick out of them and sometimes seek them out.

Their expectations about how competitive their classmates in medical school would be were:

13%	A great deal of competitiveness
19%	A fair amount of competitiveness
63%	Only a little competitiveness
6%	No competitiveness at all.

Student feelings, therefore, were mixed about the merits of competition in general, but a surprisingly small proportion of them expected medical school to be highly competitive.

There was interest in determining the kinds of persons students expected to interact with during the course of the program, the feeling being that the discrepancy between expectation and experience on this measure might be related to various outcomes. Students were thus asked to rate several categories of actors in terms of how much contact they expected to have with each. The mean score or these scales (1=extremely little contact; 7=more than enough contact) are presented in Table 41.

TABLE 41

INTERACTIONAL CONTACT--STUDENT EXPECTATIONS

	Mean Score (N=16)
Patients	5.3
Basic Science Faculty	5.2
Full-time clinical faculty	4.3
Practicing physicians	5.4
Administrators of the medical school	5.4
Medical specialists	4.6
Friends outside of school	4.1
Members of your family	3.4

It appears on the basis of these results that students generally expected to have adequate amounts of contact with everyone except members of their families.

On the whole, then, it can be concluded that there is nothing about the general expectations of this group of students regarding their medical school experience which was unexpected or out of the ordinary.

As was indicated earlier, in addition to the general expectations that the students had, an effort was made to determine their expectations about specific role behaviors that they might engage in during the program. The students were first asked how likely they thought it was that they would engage in a specified set of role behaviors and then were asked to indicate how desirable it was that they engage in these behaviors--independent of how likely it was. Each estimation was made on a seven-point scale. In Table 42 the mean scores for each role behavior for both the likelihood and desirability criteria are presented along with a difference between the means score.

TABLE 42

BEGINNING DOCTOR'S ROLE EXPECTATIONS

Role Behavior	Mean Desirability	Mean Likelihood	Difference
1. Attend classes	5.7	4.7	1.0
2. Talk about non-medical matters with other BDs	2.1	1.7	.4
3. Help fellow BDs with academic problems	2.1	2.2	- .1
4. Listen to complaints of fellow BDs	2.9	2.0	.9
5. Read texts and journals not a part of any formal assignment	2.6	3.0	- .4
6. Attend meetings, seminars, colloquia	3.7	2.4	1.3
7. Ask nurses and technicians about medical practices	2.0	2.3	- .3
8. Study to pass National Boards	3.7	2.1	1.6
9. Manage the social relationships between doctors and patients	3.5	4.3	- .8
10. Cram for exams	6.2	5.3	.9
11. Do physical exams	2.3	2.4	- .1
12. Take histories	2.2	2.0	.2
13. Diagnose patient's medical problems	2.9	4.5	-1.6
14. Ask other BDs questions about academic and clinical problems	2.2	2.0	.2
15. Seek out faculty for individualized help in the basic medical sciences	2.4	2.3	.1
16. Study basic medical sciences in which I develop special interest	2.8	3.2	.4
17. Study those areas of a basic science in which I develop a special interest	3.0	3.3	.3

Scores:

Very likely = (1)   Very unlikely = (7)

Highly desirable = (1)   Highly undesirable = (7)

There are seven items with large discrepancies between likelihood and desirability. Students thought it would be more likely (difference 1.6) than desirable to study for the National Board exams. They thought it would be more desirable than likely that they would be allowed to diagnose patient's medical problems. (-1.6 difference). BD's thought it would be more likely than desirable that they would have to attend meetings, seminars, and colloquia (1.3 difference) and also more likely than desirable that they would attend classes (1.0 difference). Students also expected that it would be more likely than desirable to listen to complaints of fellow BDs (0.9 difference), more likely than desirable that they would have to cram for exams (0.9 difference) and thought it would be desirable, but less likely, that they would manage the social relationships between doctor and patient (0.8 difference).

These differences in expectations between what they felt was likely and what they felt were desirable role behaviors provides information on where potential sources of dissatisfaction within the program lay. Students expected to have to study and cram more than they desired and expected to have to spend time in formal learning settings more than they desired. On the other hand, they didn't feel that they would be engaging in role behaviors of "doctor" as much as they desired. In other words, their expectation discrepancies suggest that they were anticipating a rather traditional program in which they would be called upon to play the role of student although they would perhaps prefer to play the role of doctor--at least to a certain extent.

Examining the relative rankings of the role expectations or the likelihood dimension, two clusters of role behaviors appear to be defined as most likely. First, they anticipate a great deal of contact with their fellow students (#2, 3, 14) and second, they anticipate engaging in a number of the routine role behaviors that characterize the early training of a physician (#7, 11, 12).

Thus, both in terms of expectations about medical school in general and expectations about specific role behaviors they might engage in, these students appeared to deviate very little from what might be expected of medical students in general. As will be discussed in the section on actual student role behavior, one of the explanations for this set of findings is the fact that the students who were chosen for the program had very little idea of what the program was to be like, or that it was intended to be innovative. Thus, there is no reason to expect that they would have expectations prior to coming to the School which would be in any way **atypical**.

In addition to asking students about specific role behaviors that they themselves might engage in, they were asked to indicate the likelihood and desirability of a set of role behaviors that their physician Advisors might engage in. Their expectations about these behaviors were considered to be extremely important in view of the fact that the student/advisor relationship was to be a central part of the program. It was felt that a critical aspect of student adjustment to the innovative nature of the School and thus a possible influence on the level of performance achieved was the nature of the interaction between student and MDA. The student's pre-program feelings about this relationship was therefore important to document.

As was the case with their expectations about their own roles, students were first asked to indicate the likelihood that their MDA's would engage in a specific set of role behaviors on a seven point scale and then asked to indicate the desirability that they engage in these behaviors, again on a seven point scale. Table 43 on the next page presents the mean scores on both criteria for all items and the difference between these means.

TABLE 43

STUDENT EXPECTATIONS OF PHYSICIAN ADVISOR BEHAVIORS

Role Behavior	Mean Desirability	Mean Likelihood	Difference
1. Give advice on personal matters	4.5	4.9	.4
2. Provide encouragement	3.0	3.2	.2
3. Oversee my study habits	4.1	4.5	.4
4. Be a friend	3.0	3.2	.2
5. Demonstrate the relevance of basic medical science	2.9	2.9	.0
6. Permit me to work closely with him on patients	2.7	3.5	.8
7. Influence my approach to treatment of patients	3.5	3.2	-.3
8. Instill standards of medical practice	3.1	3.5	.4
9. Be willing to spend a great deal of time with me	3.7	4.1	.4
10. Permit me to observe him in practice	3.1	3.1	.0
11. Understand what I, as a BD, need to know	3.1	4.1	1.0
12. Be aware of the latest developments in medical technology	3.1	3.7	.6
13. Meet me on a social basis	3.8	4.2	.4
14. Permit me to work with patients without his direct supervision	2.1	6.0	4.9
15. Provide information on what knowledge in basic medical science is required to function effectively as a physician	2.9	2.7	-.2
16. Be receptive to new ideas about medical practice	2.9	3.1	.2
17. Invite me to his home	3.8	4.3	.5
18. Permit me to define my own program	3.13	2.8	.3

Scores:

Very likely = (1)
Highly desirable = (1)
Very unlikely = (7)
Highly undesirable = (7)

In contrast to their expectations about their own roles, students' cognitive and affective orientations toward expected role behaviors of physicians Advisors were reasonably congruent. On only three items was there a difference of 0.8 or more, whereas there were seven cases in which a difference of this magnitude appeared regarding their expectations of their own roles. The students as a group felt that it was highly desirably but highly unlikely that they would be permitted to work with patients without the direct supervision of their MDA. They also felt that it was desirable but somewhat unlikely that the MDA's would understand what they as students needed to know. Finally they felt that it was more desirable than likely that the MDA's would permit them to work closely with them on patients.

Turning to an analysis of the relative certainty/uncertainty on the part of the students regarding their expectations, some interesting findings appear. Keeping the analysis consistent with that performed on the consequence assessments reported earlier in this chapter, any item about which two or more students replied that it was neither desirable nor undesirable or that it was neither likely nor unlikely was taken to be an item about which uncertainty existed. Students were, by this definition, uncertain about the likelihood of their engaging in eleven of the seventeen behaviors specified for their own roles and were uncertain about the desirability of their engaging in nine of these behaviors. Regarding the role of their physician Advisors, they were uncertain about the likelihood that their MDA's would engage in eleven of the eighteen behaviors specified and were uncertain about the desirability of twelve of the eighteen. By contrast, there was no uncertainty on the likelihood and desirability of three of the behaviors specified for their own roles (although there was no overlap among them) and no uncertainty on the likelihood and the desirability of three of the behaviors specified for the roles of the physician Advisors. These results are summarized in Table 44 below. The numbers in the parentheses correspond to the actual role behavior items in Tables 42 and 43.

TABLE 44

UNCERTAINTY IN STUDENT ROLE EXPECTATIONS

	Role of Self		Role of Physician Advisor	
	Likelihood	Desirability	Likelihood	Desirability
Uncertainty in Expectation	n=11 (3,5,6,8,9,10, 11,12,13,16,17)	n=9 (2,4,5,7,9,12, 15,16,17)	n=11 (1,2,4,6,9,10, 11,13,14,17,18)	n=9 (1,2,3,4,5,7,9, 13,14,16,17,18)
No uncertainty in Role Expectation	n=3 (2,14,15)	n=3 (3,8,10)	n=3 (3,5,7)	n=3 (5,12,15)

In general, the students were slightly less certain in their cognitive and affective orientations toward the kinds of role behaviors they could expect their advisors to engage in than they were about those they might be engaging in themselves. When the level of uncertainty was examined, it was found that one quarter or more of the students were uncertain about the likelihood of similar numbers of behaviors specified for their own role and the role of their MDA's. However, uncertainty was more intense regarding the desirability of role behaviors of their MDA's compared with their own. One quarter or more of the students indicated that they were uncertain about the desirability of only one of the role behaviors specified for themselves, while there were five of the role behaviors of the MDA's whose desirability was uncertain. These results are summarized in Table 45. The numbers in parentheses correspond to the actual role behavior items listed in Tables 42 and 43.

TABLE 45

AREAS OF HIGH UNCERTAINTY IN STUDENT ROLE EXPECTATIONS

	Role of Self		Role of MDA	
	Likelihood	Desirability	Likelihood	Desirability
Highly Uncertain* Role Behaviors	n=3 (5,16,17)	n=1 (4)	n=4 (13,14,17,18)	n=5 (1,7,9,13,17)

* Note: A role behavior was defined as highly uncertain if one-quarter or more of the students indicated uncertainty.

These findings provide an interesting contrast with the student assessments of the likelihood and desirability of program consequences discussed earlier in this section. There was a great deal less ambiguity regarding the desirability of the set of physician role behaviors. While the import of this difference is not entirely clear, it appears that the students' goals for the program in general were more sharply defined in their own minds than were their goals for the advisor-student relationship, thus leaving a great deal of latitude for role negotiation between themselves and their advisors but somewhat less for the program as a whole. Other things being equal, therefore, over time one might expect more movement on the MDA role expectation scales with less dissatisfaction than on the program outcome scales. In other words, students appear to be approaching the advisor relationship with a greater degree of affective flexibility than they were approaching the program as a whole.

2.3 Summary

To summarize the students' general expectations about medical school, nothing was found to suggest that their expectations deviated from those of medical students in general. They expected to spend a good deal of time with the books and considered the science-study-related skills to be of major importance for success in the first year of medical school. The students anticipated that learning what was expected of them, keeping up with other students, and remaining relaxed about their work would be the most difficult aspects of medical school. Student feelings were mixed about the merits of competition in general, but a surprisingly small proportion of them expected medical school to be highly competitive.

In addition to general expectations about medical school, an effort was made to determine the students' expectations about specific role behaviors that they might engage in during the program. The students were first asked how likely they thought it was that they would engage in a specified set of role behaviors and then were asked to indicate how desirable it was that they engage in these behaviors. There were seven items with large discrepancies between likelihood and desirability. These differences in expectations may provide information as to where potential sources of dissatisfaction lie within the program. The student expectation discrepancies suggest that they were anticipating a rather traditional program in which they would be called upon to play the role of student although they would perhaps prefer to play the role of doctor.

In addition to asking students about specific role behaviors that they themselves might engage in, they were asked to indicate the likelihood and desirability of a set of role behaviors that their physician Advisors might engage in. In contrast to their expectations about their own roles, students' cognitive and affective orientations toward expected role behaviors of physician Advisors were reasonably congruent. On only three of eighteen items was there a noticeable difference.

Consistent with the consequence assessments reported in an earlier section, any item about which two or more students replied that it was neither desirable nor undesirable or that it was neither likely nor unlikely was taken to be an item about which uncertainty existed. Using this definition, students were slightly less certain in their cognitive and affective orientations toward the kinds of role behaviors that they could expect their advisors to engage in than they were about those that they might be engaging in themselves. However uncertainty was more intense regarding the desirability of role behaviors of their MDA's as compared with their own. Thus it appears that the students' goals for the program in general were more sharply defined in their own minds than were their goals for the advisor-student relationship, thus leaving a great deal of latitude for role negotiation between themselves and their advisors but somewhat less for the program as a whole.

C. Socio-Demographic Profiles

1. Physician Socio-Demographic Profiles

1.1 Introduction

The purpose of this section is to provide an overview of the socio-demographic characteristics of the medical community in which the new School is located. This overview may be useful as a point of departure for decision-making regarding the relationship between community characteristics and program outcomes. Further, it may be useful insofar as it provides descriptive information on the base-line pool of potential manpower on which the program is dependent as it develops.

The data used to build the profiles were taken from the physician background questionnaire. (See Appendix B.1). The analyses presented in this section are based on the total sample of responding physicians. An analysis of the characteristics of the physicians chosen to participate in the program compared to those of physicians indicating a willingness to participate but not chosen and those of physicians declining to participate is presented in a later section on physician roles.

1.2 Analysis*

A total of nine characteristics of the physicians **was** chosen for analysis on the basis of what were felt to be important influences on the nature of any medical community. These characteristics were:

1. The number of hospital and/or clinic affiliations.
2. The number of years in practice locally.
3. The number of memberships in professional societies of varying types (i.e., local, state, regional, national, international).
4. The number of professional meetings of various types attended during the past year.
5. The number of informal contacts with medical colleagues in various regions of the country. (i.e., northeast, southeast, southwest, far west).
6. The number of years since graduation from medical school.
7. The extent of intergenerational social mobility (i.e., the "distance" between the occupational status of the physician and the physician's father).
8. Age.
9. Cosmopolitanism (i.e., a scale measuring the extent to which **contacts** with colleagues were confined to the immediate **vicinity** or extended beyond).

The purpose of the first set of analyses performed was to determine patterns of variability that existed within the local community with respect to the nine characteristics. The characteristics themselves were broken down into a set of twenty-three discrete variables, the variables were intercorrelated, and the correlation matrix was factor analyzed. The principal axis coordinates of all variables were plotted, and the solution was orthogonally rotated in order to examine simple factor structure. On the basis of these analyses, presented in Table 46, four general, overlapping factors were derived.

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* Prepared with the assistance of Michael A. Counte and Martin J. Mistretta.

TABLE 46

ITEM LOADINGS ON PHYSICIAN SOCIO-DEMOGRAPHIC PROFILE ACTIONS

Factor I (Seniority in the Medical Community)

ITEM	FACTOR LOADING
12 (b) year graduated from medical school	-.93
18 age	.92
3 years practiced locally	.69

Factor II (Professional Involvement in Local and National Medical Affairs)

ITEM	FACTOR LOADING
8 (b-1) attendance at local professional meetings/ conventions	.63
6 (b) membership in international professional societies	.60
6 (b) membership in national professional societies	.56
9 (c-1) informal professional contacts--Northeast	.46
9 (c-3) informal professional contacts--Midwest	.43

Factor III (Professional Affiliation with Local and Regional Medical Societies)

ITEM	FACTOR LOADING
6 (b) membership in state professional societies	.63
6 (b) membership in local professional societies	.62
8 (b-3) attendance at regional meetings/conventions	.54
6 (b) membership in regional medical societies	.44

Factor IV (Cosmopolitanism)

ITEM	FACTOR LOADING
8 (b-4) attendance at national meetings/conventions	.58
8 (b-2) attendance at state meetings/conventions	.58
8 (b-5) attendance at international meetings/conventions	.55
9 (c-5) informal professional contacts--far west	.50
2 (a) likelihood of hospital/clinic affiliation	.40
22 (a-d) cosmopolitanism scale	.40

The four factors underlying those characteristics of the physicians which were included in the analysis appear to be:

1. Seniority in the medical community.
2. Professional involvement in local and national medical affairs.
3. Professional affiliation with local and regional medical societies.
4. Cosmopolitanism.

Analysis of the relationships among the factors revealed that Factors I and III were strongly positively related as were Factors II and IV, while the remaining relationships were negative with the exception of that between Factors I and IV which was positive but weak. Re-examination of the variables loading heavily on each factor suggests that, with respect to the characteristics included in the analysis, patterned variability in the local medical community in which the new School was located occured around a general difference in orientation toward involvement and affiliation. This difference in orientation appears to be related to the "cosmopolitan" vs. "local" distinction which figure so prominently in the sociological literature on occupations (e.g. Merton, 1957; Gouldner; 1957;Heatherington,1971) with an important exception. Included in the "cosmopolitan" orientation is a high degree of involvement in local medical affairs. This exception has important implications for the new program, for it suggests that the more cosmopolitan physicians would not necessarily be likely to define involvement in the program as unimportant. Indeed, the data suggest that they might well be expected to become heavily involved.

Pursuing the analysis of the socio-demographic characteristics of area physicians, similarities and differences between general practitioners and specialists were examined. Since the new program was relying on the inputs of both groups, it was felt that it was important to explore the extent to which the nature of these inputs might be assumed to be homogeneous. While there is no reason to assume, a priori, that variability in socio-demographic characteristics is causally related to "quality" of program participation, it might prove useful from an administrative point of view to be aware of where differences were most apparent for the purpose of program development.

A one-way analysis of variance was computed for each of the twenty-three variables included in the factor analysis to determine sources of variability between the two groups. On the basis of these analyses it was found that general practitioners were members of significantly fewer local and international professional societies, that they attended significantly more local professional society meetings but significantly fewer regional and national meetings, and that their professional contacts were significantly narrower in geographical scope than those of the specialists. The general practitioners, therefore, appear to be more highly involved in the local medical community than the specialists, but do not appear to differ significantly in other ways in the variables considered here. These results suggest no need for any formal differentiation of roles within the program on the basis of the type of practice the physician is engaged in.

1.3 Summary

A variety of socio-demographic characteristics of physicians in the medical community in which the new School is located was analyzed in order to provide an overview of the pool of potential manpower from which the program could draw. In order to examine patterns of variability within the community, twenty-three variables representing a variety of socio-demographic characteristics were intercorrelated and factor analyzed. An orthogonal rotation of the principal axis solution yielded four general, overlapping factors which, on the basis of their interrelationships, appeared to be analogous to the "local vs. cosmopolitan" distinction found in other research. The more "cosmopolitan" physicians, however, also tended to be highly active in local medical affairs in contrast to what has been found in other research. This finding was interpreted as indicating that these physicians would not necessarily eschew participation in the new program.

A one-way analysis of variance was also computed for each of the twenty-three variables included in the factor analysis in order to determine similarities and differences among general practitioners and specialists. While the general practitioners tended to be more active in local affairs, and the specialists more active in extra-local affairs, there appeared to be no reason to infer, on the basis of the variables included in the analysis, that any sort of role differentiation within the program on the basis of type of practice was called for.

2. Student Socio-Demographic Profiles

2.1 Introduction

Two different sources of data were used to build socio-demographic profiles of the first-year students in the program. First, descriptive information was made available by the medical school which permitted a general profile of the sixteen students to be built. While it would have been desirable to build comparable profiles for the Chicago students in order to determine similarities and differences between the two groups, the necessary data were not available at the time of this writing.

Second, a number of questions from the student background questionnaire (see Appendix B.5), administered to both the Urbana and the Chicago students, was examined in order to explore the extent of homogeneity between the two groups. These questions provided an admittedly crude basis for comparison, but because "harder" data were lacking, it was felt that the comparison would be useful.

It should be noted that in the comparative analysis of the two groups of students reported in this section and the one that follows, there is a large difference in sample size; that in Urbana is 16 while that in Chicago is 104. Because of this difference and because of the problem of regression toward the mean, a degree of caution in the interpretation of the results is suggested.

2.2 Analysis*

The profile of the Urbana students derived from the records of the school is presented in Table 47.

TABLE 47

STUDENT BODY CHARACTERISTICS, SCHOOL OF BASIC MEDICAL SCIENCES URBANA 1971-72

Sex

Male	Female
15	1

Marital Status

Married	Single
2	14

Residency

Illinois	Out of State
15	1

Age

$\bar{x}$ = 21.7   Range: 20-22

Undergraduate Major

Chemistry	Biology	Psychology	Math	Ag. Sc.
6	5	3	1	1

Institution Attended

University of Illinois	Other Illinois	Out of State
9	3	4

Public	Private
12	4

Undergraduate GPA (5.0 system)

$\bar{x}$ = 4.53   Range: 4.18 - 4.93

MCAT Scores

Verbal	Quantitative	General Information	Science
$\bar{x}$ = 568	$\bar{x}$ = 641	$\bar{x}$ = 561	$\bar{x}$ = 579
Range: 425-665	Range: 545-735	Range: 455-665	Range: 535-645

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* Prepared with the assistance of Margaret McKinley.

Turning to a comparison between the Urbana and Chicago students, a variety of questions concerning their backgrounds was examined. First, students were asked the age at which they definitely decided to study medicine. Responses to this question are presented in Table 48.

TABLE 48

AGE AT WHICH STUDENT DEFINITELY DECIDED TO STUDY MEDICINE

	Urbana		Chicago	
Age	number	%	number	%
Before the age of 14	0	(0.0)	8	(7.69)
Ages 14 or 15	1	(6.25)	7	(6.73)
Ages 16 or 17	3	(18.75)	12	(11.54)
Ages 18 to 20	11	(68.75)	49	(47.12)
Since Age 20	1	(6.25)	28	(26.92)

These data suggest that a greater proportion of the Chicago students definitely decided to study medicine since age 20, but that similar proportions of both groups made the decision since age 18.

While the data are too cumbersome to present in tabular form here, it was found that the Urbana students reported receiving somewhat stronger support for their decisions to become a doctor from both their mothers and their fathers than did the Chicago students. They reported receiving similar amounts of support, however, from their spouses, their brothers and sisters, and other relatives.

Students were asked to think about the type of professional activity to which they felt they would prefer to give most of their working time once they had completed their formal education. Their responses to this question are presented in Table 49.

TABLE 49

STUDENT PROFESSIONAL ACTIVITY PREFERENCES

	Urbana (n=15)		Chicago (n=99)	
	number	%	number	%
General Practice	8	(53.33)	44	(44.44)
Specialty Practice	6	(40.00)	49	(49.50)
Teaching Some Medical Specialty	0	(0.0)	2	(2.02)
Research	0	(0.0)	0	(0.0)
Other	1	(6.67)	4	(4.04)

The Urbana students expressed a somewhat greater preference for General Practice compared to Specialty Practice, while the Chicago students expressed a slight preference in the opposite direction. Given that one of the objectives of the Urbana program is to create an environment in which students will seriously consider General Practice as a career, it will be important to monitor the career choices of students in the two schools to see whether a greater proportion of the Urbana students actually choose this activity for their careers. Of considerable interest also is the fact that no student in either school indicated that research was a preferred professional activity. Again, it will be important to monitor actual career choices to determine differential effects on student predispositions to enter research given that there was no interest indicated at point of entry into medical school.

When the students were asked to consider - apart from their preferences - the kind of professional activity they expected to give most of their working time to, there was an interesting shift in the responses of the Chicago students. These responses are presented in Table 50.

TABLE 50

STUDENT PROFESSIONAL ACTIVITY EXPECTATIONS

	Urbana (n=15)		Chicago (n=96)	
	number	%	number	%
General Practice	9	(60.00)	50	(52.08)
Specialty Practice	5	(33.33)	37	(38.54)
Teaching Some Medical Specialty	0	(0.0)	3	(3.13)
Research	0	(0.0)	1	(1.04)
Other	1	(6.67)	5	(5.21)

Comparing the data in Tables 49 and 50, there is a greater discrepancy between the preferences and expectations of the Chicago students regarding General versus Specialty practice than there is for the Urbana students. Based on expectations alone, there is essentially no difference between the two groups. This finding underlines the importance of monitoring the medical school experience and career choices of the two groups over time, particularly given current exhortations about the need to enhance the attractiveness of General Practice in the eyes of medical students in order to meet some of the current problems in health care delivery facing the health care system.

Students were asked what kind of setting they envisioned practicing in. Approximately one-third of each group indicated that they planned to work out of a private office and have a hospital affiliation, and another third planned to be working in a small group clinic. Of the remaining students, approximately twelve per cent of each group envisioned working in a large private clinic or hospital, while the balance, or twenty per cent, saw themselves in other kinds of settings. Interestingly, no student saw himself in either a medical school or in a private office with no hospital affiliation. It appears, then, that the two groups were highly similar in their views about the kind of setting they would be working in after their formal education had been completed.

There was some difference between the two groups regarding what they expected to be earning 10 years after medical school; however, these differences lessened regarding their expectations about earnings at the peaks of their careers. The data on these two questions are presented in Table 51.

TABLE 51

STUDENT EARNING EXPECTATIONS

	Ten Years After Medical School				At The Peak Of Their Career			
	Urbana (n=16)		Chicago (n=93)		Urbana (n=16)		Chicago (n=93)	
Earnings	number	%	number	%	number	%	number	%
< $25,000	9	(56.25)	34	(36.80)	5	(31.25)	18	(19.15)
> $25,000	7	(43.75)	59	(63.20)	11	(68.75)	75	(80.85)

Overall, the earnings expectations of the Chicago students were higher than those of the Urbana students. This difference was greater with respect to what they expected to be earning ten years after medical school than at the peak of their careers.

Since the costs of medical education are rapidly increasing, another characteristic of the student groups of importance was the difficulty they reported in financing their schooling. Data on this issue are presented in Table 52.

TABLE 52

AMOUNT OF DIFFICULTY IN FINANCING MEDICAL EDUCATION

	Urbana (n=16)		Chicago (n=99)	
Difficulty	number	%	number	%
Slight	3	(18.75)	44	(44.49)
Moderate	6	(37.50)	18	(19.12)
Great	7	(43.75)	36	(36.38)

A smaller proportion of the Urbana students reported slight difficulty in financing their medical education, although roughly comparable proportions in both groups reported great difficulty. In terms of sources of financial support, the proportion of students receiving half or more of their support from scholarships, loans and parents was approximately the same for both groups. A greater proportion of Urbana students received half or more of their support from employment during the school year, while a greater proportion of the Chicago students received half or more of their support from personal savings, employment during vacations and spouse employment. Overall, parental support was the most significant source, with slightly more than one-quarter of the students in each program indicating that it accounted for half or more of the total support they received.

2.3 Summary

Although "hard" data on socio-demographic characteristics were available for the Urbana students only, an analysis of a variety of perceptual questions suggested that the similarities between the students in the Chicago and Urbana programs were more striking than the differences. While the Urbana students as a group tended to prefer General Practice over Specialty Practice, in contrast to the Chicago students, the expectations of the two groups regarding the type of practice they would engage in were similar. And while the Chicago students expected to be earning more money after they had been out of school ten years than the Urbana students, the earnings expectations of both groups at the peak of their careers were similar. There were few other differences between the groups, and the conclusion drawn based on the data available is that, by and large, the initial conditions for the two programs with regard to the background of the entering students were quite similar.

3. Pre-Program Professional Socialization Among Students*

3.1 Introduction

One possible source of variability among students entering the new program was the extent to which they had already adopted the attitudes, beliefs and norms characteristic of the medical profession itself. One assumption underlying socialization theory is that the process itself has behavioral consequences. At least three kinds of questions are therefore important:

1. To what extent where the Chicago and Urbana programs confronted with groups of students with similar levels of pre-program professional socialization?
2. To what extent is variability in pre-program professional socialization among Urbana students related to differential performance?
3. What are the influences of the program itself on the socialization of the students into the medical profession?

While all three questions are interesting, the analysis in this section will be limited to the first.

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* Prepared with the assistance of Michael A. Counte, Martin J. Mistretta and Richard O. Dickinson.

3.2 Analysis

The data for the analyses were taken from the student background questionnaire (see Appendix B.5). A number of variables was chosen for analysis on the basis of examination of what the theoretical construct suggested as being relevant. Included in the analyses were the following:

1. When the student first thought of becoming a doctor. (The earlier in his life, the greater the extent of pre-program professional socialization.)
2. The age at which the student definitely decided to study medicine. (The earlier in life, the greater extent of pre-program professional socialization).
3. The importance of others in the decision to study medicine. (The greater the overall amount of external influence, the greater the extent of pre-program professional socialization.)
4. The amount of social support the student was currently receiving from relatives regarding the decision to become a doctor. (The greater the overall amount of social support from relatives, the fewer the problems in adapting to the demands of medical school.)
5. The amount of committment on the part of the student to medicine as a career. (The greater the amount of committment, the greater the extent of pre-program professional committment.)
6. The amount of doubt expressed by the student about the decision to become a doctor. (The greater the amount of doubt, the lower the extent of pre-program professional socialization.)
7. The point in time at which the student expects to think of him or herself as a doctor. (The earlier the point in time,

TABLE 53

ITEM LOADINGS ON STUDENT PRE-PROFESSIONAL SOCIALIZATION FACTORS

Factor I (Potential Patient Problems)

ITEM	FACTOR LOADING
19 (a-6) patient emergency	.81
19 (a-10) patient medication/dosage	.80
19 (a-9) patient difficult diagnosis	.76
19 (a-8) doctors as patients	.75
19 (a-11) unbelieving patients	.74
19 (a-1) patient emotional outbursts	.68
19 (a-4) patient testing problems	.67
19 (a-5) serious and irremediable patient illness	.66
19 (a-7) conducting a venipuncture	.65
19 (a-3) painful procedure on a sick child	.60
19 (a-2) preventing patient embarrassment during a pelvic operation	.58

Factor II (Influence of Medical and Educational Personnel)

3 (a-7) importance of medical students known	.72
3 (a-5) importance of physicians known	.70
3 (a-6) importance of physicians heard or read about	.67
3 (a-8) importance of undergraduate teacher	.54

Factor III (Influence of Family and Non-Medical Friends)

3 (a-2) importance of father	.87
3 (a-1) importance of mother	.81
3 (a-4) importance of friends not in medicine	.44

Factor IV (Present Amount of Social Support--Family/Relatives)

4 (e) social support--other relatives	.78
4 (d) social support--brother or sister	.73
4 (b) social support--father	.58
4 (a) social support--mother	.50

These results are quite suggestive. Most important, since the variables chosen on the basis of their theoretically deduced relationship to an underlying dimension of pre-program professional socialization do not load on a single factor, the concept appears to be multi-dimensional in nature. While the choice of different variables could conceivably have resulted in the emergence of a single factor, the concept, as operationally defined here, is multi-dimensional.

Second, an examination of the simple factor structure suggests that the dimensions of the concept as operationally defined here are:

1. The amount of confidence the student has prior to medical school in relation to his or her ability to deal with a variety of medical problems.
2. The amount of influence exercised by members of the medical profession on the student's decision to become a doctor.
3. The amount of influence exercised by members of the student's family and others not involved in the profession on the decision to become a doctor.
4. The amount of social support being received by the student from family members.

Factors three and four are positively related, indicating the importance of the family, and even friends not in medicine, as sources of both influence regarding the student's initial decision to definitely study medicine and social support upon his entry into medical school. Interestingly, these sources were not related to either Factor II (influence of medical personnel) or Factor I (perceived confidence pertaining to potential problems posed by patients).

To explore the similarities and differences among the Urbana and Chicago students regarding each of the eight categories of variables described earlier, a one-way analysis of variance was computed for each of the twenty-nine variables used in the factor analysis. It was found that the Urbana students had significantly more doubt about medicine as a career choice, and significantly less confidence about their ability to deal with a patient who has an emotional outburst of some kind, to deal with a doctor as one of their patients, to decide on appropriate medication and dosage, and to handle a patient who refuses to accept what they tell him. In other words, there were few differences between the two groups in general, but where differences were found, the Chicago students were more highly socialized into the profession prior to their careers as medical students.

Given the results of the factor analysis presented earlier, it is likely that the Chicago students scored high on Factor I, whereas the Urbana students scored high on Factors III and IV. If this is the case, then it can be argued that the multidimensionality of the pre-program professional socialization concept helped to discriminate between the two groups. This analysis, therefore, has important implication for theories of professional socialization.

3.3 Summary

Considerations of the variety of kinds of initial conditions facing the new program suggested that the extent of pre-program professional socialization among students should be taken into account. Of particular interest were the similarities and differences that might exist between students in the Urbana and Chicago programs, although it was pointed out that these other questions are important as well.

To explore patterns of variation among the students, a number of variables chosen on the basis of their presumed relationship to the theoretical construct was factor-analyzed. An orthogonal rotation of the princicipal components solution yielded four distinct factors, as findings which suggested that the concept of pre-program as operationally defined was, in fact, multi-dimensional.

A series of one-way analyses of variance was performed on each of the variables in order to determine areas of similarity and difference between the two groups. While there were some significant differences, particularly with respect to the amount of confidence expressed by the Chicago students in their ability at present to deal with a range of medical problems, in general the analyses suggested that the two groups were relatively homogeneous.

REFERENCES

Crespi, Irving. "What Kinds of Attitude Measures are Predictive of Behavior?" , *Public Opinion Quarterly*. 34 (3): 327-334, 1970.

Fishbein, Martin, (Ed.). *Readings in Attitude Theory and Measurement.* (New York: John Wiley and Sons, Inc., 1967).

Gouldner, Alvin W. "Cosmopolitans and Locals: toward an Analysis of Latent Social Roles - I". *Administrative Science Quarterly*. 2 (2): 281-306, 1957.

Gouldner, Alvin W. "Cosmopolitans and Locals: toward an Analysis of Latent Social Roles - II". *Administrative Science Quarterly*. 2 (2): 444-480, 1958.

Hetherington, Robert W. "Local and Cosmopolitan Physicians". *Canadian Review of Sociology and Anthropology*. 8 (1): 32-47, 1971.

Merton, Robert K. (Ed.). "Patterns of Influence: Local and Cosmopolitan Influentials". *Social Theory and Social Structure*. Pages 387-420. (New York: The Free Press of Glencoe, 1957).

Merton, Robert K. *et al*, (Eds.) *The Student Physician*. (Cambridge, Mass.: Harvard University Press, 1957).

Tittle, Charles R. and Richard J. Hill. "Attitude Measurement and Prediction of Behavior: an Evaluation of Conditions and Measurement Techniques". *Sociometry*. 30 (4): 199-213, 1967.

VI. PROGRAM STRUCTURE AND DEVELOPMENT: PARTICIPANT ROLES AND CURRICULUM

A. Introduction

The preceding section of the report examined conditions existing prior to the start of the new program in terms of the cognitive and affective assessments of local physicians and first year students of potential consequences, student expectations of their own roles and those of their physician advisors, the extent of student pre-program professional socialization, and socio-demographic profiles of students and physicians. In a very real sense, these conditions represent the "givens" in the situation.

This part of the report examines some of the dynamic aspects of the program, that is, the processes and relationships that emerged and the sources of satisfaction and dissatisfaction among various categories of program participants, and reviews the curriculum that was developed.

The first section, based primarily on interviews, focuses on the roles of the participating physicians, the students, and the campus faculty. In describing and analyzing the roles that individuals play in organizations, at least two parameters -- among others -- need to be considered. First, the formal organizational definitions of the roles (i.e., role prescriptions) need to be known, and second, the actual behaviors of the individual occupying those formally defined positions need to be known. In addition, it is often helpful to be aware of sources of satisfaction and dissatisfaction regarding the interplay between formal role definitions and actual behavior. Role analysis is a useful tool in program evaluation. Often there is a surprisingly large discrepancy between the kinds of behaviors one might expect on the basis of formal role definitions (i.e. intended behaviors) and the kinds of behaviors that are actually observed. From an administrative point of view, it is important to be aware of both the magnitude of the discrepancies and the potential underlying reasons for them. In some cases, these discrepancies impinge on the attainment of organizational objectives; in other cases, however, attainment of these objectives is actually faciliated. The analyses of the roles of MDA's and MDE's,students, and campus faculty, therefore, focus on: the formal organizational definitions of the role; role behaviors; and sources of satisfaction and dissatisfaction with the program.

The second section of this part of the report describes the curriculum and how it was developed.

B. Physician Advisor and Evaluator Roles*

1. Comparison Among Participants, Interested Non-Participants and Decliners

The twenty local physicians participating as advisors and evaluators during the first year were chosen by the local medical society from a group of physicians who had indicated a willingness to serve in an unpaid capacity in response to a request made by the Dean of the School in a letter to all area physicians in January of 1971. There are thus three groups of physicians which can be distinguished: those who were chosen to participate, those who indicated a willingness to participate but were not chosen, and those who declined to participate. As background for the discussion of participant roles, it was felt that it would be useful to examine similarities and differences among these groups for two reasons. First, since the administration planned for rapid expansion of the number of students and thus the number of physician participants, the extent to which the first group of MDA's and MDE's was similar to those physicians constituting a pool of potential MDA's and MDE's was considered problematic, particularly in relation to outcomes. If the students did well during the first year, should the choice of additional physicians as the program expanded be made on the basis of criteria similar to those used in choosing the first group? If so, to what extent was comparable manpower available? Second, the kinds of criteria employed by the local medical society for choosing the first group might become apparent if the characteristics of the three groups were compared.

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* Prepared with the assistance of Richard O. Dickinson and Barbara L. Peters.

Data for the comparative analysis were taken from the administrative survey of the MDA's and MDE's (see Appendix B.4) and from the background questionnaire sent to all area physicians (see Appendix B.1). The first comparison made was on the basis of type of practice, and the data are presented in Table 54.

TABLE 54

DISTRIBUTION OF PHYSICIAN GROUPS BY TYPE OF PRACTICE

	Program Involvement			
Type of Practice	(N=20) Participating	(N=77) Interested Non-Participating	(N=24) Not Interested	Total
General Practice	5	15	10	30
Specialty Practice	15	62	14	91

The ratio of G.P.'s to specialists chosen to participate corresponds precisely to that in the population as a whole; however, G.P.'s are overrepresented among those not interested. While one can only speculate about the reasons for the greater reluctance among G.P.'s as opposed to specialists to participate, the fact is a constraint which should be taken into account by program administrators, particularly if there is interest in developing a larger program which is designed to predispose students toward general or family practice. Given what is known about the socialization process, it is not unreasonable to expect that students will tend to adopt the values of those with whom they are working most closely. If general practitioners are widely underrepresented, their impact on the formation of student values will be minimized, with resulting consequences for career choice.

A second comparison was made on the basis of the number of years the physicians had been in practice. The results of this analysis are presented in Table 55.

TABLE 55

DISTRIBUTION OF PHYSICIAN GROUPS BY NUMBER OF YEARS IN PRACTICE

Years in Practice	Program Involvement (N=20) Participating	(N=77) Interested Non-Participating	(N=24) Not Interested	Total
0-5	2	21	7	30
6-10	3	14	6	23
11-15	2	8	1	11
16-20	4	9	7	20
21-25	3	15	1	19
25	6	7	2	15

These data suggest that length of practice may have been an implicit criterion used to choose the participating physicians. Of the available (i.e., interested), physicians, fewer than ten percent of those who had been in practice five years or less were chosen, whereas nearly half of those who had been in practice more than twenty-five years were chosen. Noteworthy also is the fact that, contrary to what might be expected, somewhat more than half of the twenty-four physicians who declined the Dean's initial invitation to participate had been in practice ten years or less.

The remaining variables used in the comparative analysis of the three groups are taken from the physician questionnaire alone. Since only 15 out of the 20 participating physicians responded to the questionnaire, the analyses have to be regarded somewhat more tentatively than those discussed above. The eight variables included in the over-all analysis were: the number of hospitals and/or clinics the physicians were affiliated with; the number of professional medical societies they belonged to, exclusive of the local medical society; the number of conventions and professional society meetings attended during the most recent twelve-month period, including meetings of the local medical soceity; the number of visits to leading hospitals and medical centers in other cities in the most recent twelve-month period; their age; their sociometric centrality, that is, the number of times they were mentioned by others in the medical community as sources of advice and information, discussion or friendship; professional contact; and an overall measure reflecting their assessments of the potential consequences of the new program. All of these variables were ones which had, in previous research on the medical community [e.g. Coleman et.al. (1966)], proven to discriminate among groups of physicians with regard to a variety of outcomes (e.g. "innovativeness"). The purpose in using them here was to determine whether they discriminated among the groups of physicians relating to the new program in various ways. The results of a one way analysis of variance for each of the variables separately are summarized in Table 56.

TABLE 56

ANALYSIS OF VARIANCE BETWEEN PHYSICIAN GROUPS ON SELECTED VARIABLES

Variable	Group Means			F Ratio	Significance
	Participating	Interested Non-Participating	Not Interested		
Number of hospitals and/or clinic affiliations	2.53	2.7	2.3	1.093	NS
Number of professional society memberships	2.4	3.9	3.4	3.61	.05
Number of conventions and professional meetings attended	10.4	11.1	10.5	0.79	NS
Number of out-of-town visits	16.7	13.1	15.9	5.63	.01
Age	43.1	48.4	51.5	3.19	.05
Sociometric Centrality	5.2	3.8	2.3	1.77	NS
Professional Contact	19.5	23.5	19.9	2.23	NS
Consequence Assessments	220.3	236.3	229.9	0.25	NS
	N=15	N=77	N=24		

DF=2,113

The results of this analysis are inconclusive. The participating physicians were significantly younger, although the analysis reported earlier suggested that there was a disproportionate number of them who had been in practice longer. They made significantly more out-of-town visits to hospitals and medical centers, yet belonged to significantly fewer professional societies beyond the local one. And while the results were not significant they tended to have professional contacts of a more local nature and to be sociometrically more central in the local medical community. What tentatively emerges is a picture of the participating physicians as a group as being tied closely to the local medical community to a greater extent than the other two groups, a picture which should not be particularly surprising. The extent to which the program can expand rapidly while maintaing comparable levels of physician input is still questionable, however.

2. Formal Organizational Definitions of MDA and MDE Roles

As noted above, the physicians chosen to participate in the first year of the program's existence were selected by the local medical society from a pool of area physicians who had indicated a willingness to do so. In contrast to role prescriptions in many organizations, those developed by the School during the first year were not highly specified or rigidly defined. In the letter sent to the area physicians by the Dean extending his invitation to join the faculty of the School as clinical associates a description of the positions to be filled was included. This description reads as follows:

> 1) Student Advising. The Student Advisor will discuss basic science and clinical problems of the disease states seen by the student. This should involve a mutual exchange of information and application of the clinical experience of the physician to the basic science problems encountered. To assist the physician in his role as advisor and tutor, it is my intention to place pertinent up-to-date textbooks on loan to the physician in his office so that discussions may be based on current resource material.

2) Student Evaluation. Student evaluators will see different students on a regularly scheduled basis for the purpose of evaluating student achievement with respect to the curriculum work for which he has been responsible. The evaluation process should be a learning process as well as an evaluative one, so that the student may be apprised by a source independent of his advisor as to his strengths and weaknesses.

3) a. Curriculum Development. Curriculum development will function to define that basic science information essential to medical practice. In establishing the school it will involve advisors, evaluators, and other physicians interested in the basic science curriculum. The purpose of this committee work will be to evaluate the goals and content material for which the students are responsible, with a view to testing it in terms of relevance for the practice of medicine. In this sense, physicians on the Curriculum Committee will make a major input into the ultimate form of the pre-clinical curriculum.
b. Policy and Executive. Since the practicing physicians will play a major role in the functioning of this Medical School, they should be represented effectively at the policy level. Persons interested in such a role should indicate their preference at this time.
c. Planning for a Clinical Program. Planning for the clinical program should begin at an early date. This will require the development of learning goals and clinical curriculum development. The objective of this work is to identify that training and learning which the Medical students needs to be qualified as an M.D.
d. Ad Hoc Work. I am certain all job descriptions cannot be identified at this time. This type of work refers to those physicians who would prefer not to be specifically committed at this time, but who would be available for various positions and committee work as the school develops.

Included within a report entitled "Status of Curriculum at the School of Basic Medical Sciences-Urbana" (January 1, 1971) were the following role descriptions:

> M.D. Advisor. This individual will be a non-salaried faculty member engaged in full-time clinical practice. He may be in any field of medicine. His voluntary time commitment will be four hours per week.
>
> He is to function as an advisor, tutor, and evaluator of the B.D.'s work. It is expected that B.D.'s having studied a disease process, will discuss with his advisor the curricula elements relating to that disease. Advisors are to insure that the B.D. covers and understands the curricular material for that disease. To assist the advisor, a contemporary basic science library will be maintained in his office.

> In addition to the technical problems of curriculum development, it is hoped that the advisor will serve as a counselor and friend to the B.D. in his introductory year in medicine.
>
> M.D. Evaluator. B.D. evaluators will be practicing physicians who will function in a similar, but more formal fashion than the M.D. advisors. The evaluators will be selected from physicians with the broadest basic science backgrounds. They will meet with individual B.D.'s on a rotating basis for approximately one hour per week. Their task will be to make a separate evaluation of a B.D.'s progress in his curriculum coverage. An evaluator will be expected to review four students per week.

In addition to these formal guidelines, provided to the area physician by the School, further role definitions were undoubtedly supplied by the Dean at medical soceity meetings as well as through discussions with physicians on an individual basis, although no data are available to permit systematic examination of the scope and pervasiveness of this activity.

It is apparent that MDA and MDE roles were not rigidly defined by the School. In fact, there was considerable question in the minds of many observers about the effects of this lack of definition on student performance. The physician Advisors were told to expect to spend four hours per week with their advisees; the physician Evaluators were expected to see four different students each work for one hour each. How this time was to be spent, however, was only minimally designed. The advisor was expected to be advisor, tutor, counselor and friend.

3. Role Behaviors of MDA's and MDE's

Data on the role behaviors of the MDA's and MDE's were collected through interviews and an administrative survey (see Appendices C.1 and B.4). The interviews were designed to provide information on pre-program expectations, rewards from participation and role behaviors. The discussion that follows in this section is intended to highlight recurrent themes found in the interview material.

The amount of information the physicians had about the program where they agreed to participate was remarkably meager. Not one indicated that he had much of an idea of what to expect, either from the students or from the School. Their reasons for agreeing to participate were less vague, however. Most indicated that the opportunity to teach and develop contact with students was a factor in their decision, as was the status in the community that accompanied affiliation with a medical school. An additional factor for some was the nature of the program which was variously described as "challenging", "exciting", and "a refreshingly different approach to the basic sciences". By and large, their initial expectations were conditioned almost solely by the formal descriptions presented above, a fact which created considerable anxiety as well as considerable latitude for personal definition of the "proper" relationship between themselves and the students.

Since participation was on an unsalaried basis, the physicians were queried about the kinds of rewards that accrued to them from participation. This question was viewed as particularly important because of the potential of voluntary teaching manpower for reducing the costs of medical education. Many physicians felt that the necessity to review the basic sciences in order to "keep up" with the students was an important payoff for them personally. Most indicated that the amount of time required to prepare was substantial but that the investment was worthwhile. In addition, several indicated that the time required for preparation would decrease over time as the material became more familiar. One physician felt that his practice had changed noticeably and that the experience had made him "sharper". Another kind of payoff frequently mentioned was increased respect for colleagues. This dimension also seemed to work in another way -- one physician indicated that his colleages "might not think I'm doing my part" if he did not participate.

Status within the medical community, therefore, appeared to operate as a motivator in two ways. For some, participation was perceived to enhance status, while for at least one other, non-participation was seen as possibly diminishing status.

The relationships between physicians and students as reported by physicians were highly variable, both within and between pairs. Most physicians reported that the amount of time they actually spent with their students varied as a function both of their own work loads and of the students' interest and relationship to a particular problem area in the curriculum at any given point in time. They tended to agree that student demands on their time were most intense at the beginning and end of a given problem area. There also appeared to be differences among the students regarding the amount of time they wished to spend with their advisors and evaluators. In addition some physicians felt the pressures of their own work more intensely than others. The result of these multiple influences was that, overall, the average amounts of time per week physicians actually spent with their students varied from 2 to 9 hours per week. And the variance around the mean was greater for some than for others. Despite this variability, most physicians felt that the time they spend with the students was adequate to meet the student needs.

Variability in time spent with students reflects the relatively unstructured role of the MDA's and MDE's. The formal expectations of four hours per week was considered excessive by some and inadequate by others. Each physician was able, because of the flexibility provided by the lack of formal structure, to define his own role in ways which he felt were adequate to meet both his needs and the needs of the students. In retrospect, it appears that flexibility in this regard paid off for the program as a whole.

Most physicians felt that the basic science training the students were receiving in the new program was superior to that they had received. Most often cited as reasons were: the fact that their own basic science education relied too heavily on rote memorization of a large body of information they were seldom, if ever, called upon to use in practice; that the early exposure to patients in a clinical setting provided what for them had been a missing link between basic science education and clinical application; and that the problem-centered curriculum was a vast improvement over the discipline-centered curriculum.

An interesting dynamic in the student-physician relationship emerged from the uncertainty regarding student performance on the college-wide year-end comprehensive examinations in the basic sciences and Part I of the National Boards. Because of the newness of the program and because of the fact that the physician was generally the individual with whom the student had most contact, the physicians tended to see student performance as a reflection on themselves. While somewhat speculative, one might conclude that the physician was motivated to help the student because he had a personal stake in the outcome. No one wanted to be the advisor or evaluator of a student who performed poorly. Whether intended or not, it appears that the structure of the program had motivational consequences for the physician of a very special nature. In most educational programs, one individual is responsible for teaching several students and there is no expectation that all students will perform well. In fact, evaluation procedures based on a "curve" assume differential performance. There are relatively few formal or informal constraints on the teacher to insure that all students do well. In this program, however, the existence of a common exam at the end of the year in conjunction with individualized, visible teaching-learning dyads produced, at least implicitly, a situation in which failure to perform on the part of the student could be imputed to inadequacy on the part of the advisor and/or evaluator. This situation appeared to have positive motivational consequences for the physicians, and suggests interesting possibilities for structuring the teaching-learning process in other settings.

Another aspect of the role behavior of participating physicians was the nature of the interaction among themselves. For administrative reasons, the assignment of evaluators to advisor-student pairs was made on the basis of proximity. The intent of this assignment was to facilitate matters for the student. One consequence of the assignment was to facilitate interaction between advisors and evaluators. The greatest amount of interaction among participating physicians occured between advisors and evaluators,and a variety of informal, tacit agreements between them emerged over time. In some cases, the evaluators would seek the opinion of the advisor about the capacity of the student, and this opinion would inevitably be reflected in his evaluation of the student. In other cases, the advisor would seek the opinions of the evaluator, and these would then be reflected in the demands subsequently made on the student. From the perspective of the outside observer, this situation is inherently neither "good" nor "bad". It is rather a consequence of the structure of the program and should be recognized as such. Evaluation of its merits must be made in light, at least in part, of the consequences it produced. If the performance of the students can be considered to be one such consequence, it is difficult to evaluate the situation negatively.

During the year certain kinds of behavioral adjustments on the part of the physicians were observed. One of the more interesting was the emergence of a rudimentary form of specialization. While it was originally anticipated that a given student would spend the entire year with a given advisor, in practice there was a good deal of movement of students among advisors and, in some cases, to physicians not formally a part of the program. In some instances, this movement was initiated by the advisor, in others by the student. The reason for the movement in all cases was the perception of either physician or student that the needs of one or the other party could best be served by the student's working with another physician on a temporary basis. Occasionally, the reason was an unusually heavy work load for the physician during a particular week; more often, the reason was the feeling that the advisor did not have a patient under his care at a particular point in time who manifested symptoms corresponding to the particular problem in the curriculum that the student was working on at that time. The result was not only a reasonably high degree of student mobility, but also the informal definition of certain physicians as being particularly well-equipped to deal with particular parts of the curriculum. The emergence of the form of specialization raises some important issues for the program as a whole. Should the present structure be retained or should a structure based on the areas of competence of physicians and their relationship to the curriculum be adopted. In either case, it appears desirable to maintain the locus of responsibility for individual students on individual physicians.

4. Sources of MDA/MDE Satisfaction and Dissatisfaction

The results of an administrative survey of the participating physicians at the end of the first year indicated overall satisfaction with the program. Particularly satisfying aspects of the program were the opportunities to review the basic sciences and the contact with the students during the year.

The interviews with the physicians conducted two-thirds of the way through the year revealed some specific sources of dissatisfaction. While some of these sources appear to be salient, that is, common to large numbers of participants, they should be mentioned as potential sources of structural instability. The most salient issue was that of time. While no one felt that he could not afford to spend four hours per week with the students, there was some concern voiced, of a more general nature, that the time required might create future problems for the program. Given the constraints of the interview situation itself, it was difficult to discern whether the physicians were suggesting that the time demands would impinge on their own participation in the future, whether they felt that it would influence the likelihood that additional physicians could be attracted to the program on a voluntary basis as it expanded or both. What was evident, however, is the fact that the continued existence and future development of the program with the unsalaried participation of physicians was problematic.

A second area of concern or dissatisfaction was the amount of contact between the participating physicians and the campus faculty. There was some feeling that increased contact was desirable and that the practicing physicians had very little idea of what the campus faculty were actually doing.

Finally, there was some dissatisfaction with the physical facilities, the looseness of the curriculum and the availability of texts. Each of these problems, however,either has been or will be solved as the School obtains the resources necessary to purchase books and equipment and develop space, and as the curriculum becomes more fully developed.

5. Summary

This section of the report focused on the roles of the physician advisors and evaluators in the School of Basic Medical Sciences. In an analysis of the characteristics of participating physicians, physician interest in the program but not participating, and those declining to participate it was found that those participating tended to be more highly integrated into the local community than either of the other groups. It was also found that general practitioners were overrepresented among those who declined to participate, a fact which, given their small numbers relative to specialists in the community as a whole, raised some questions about the kind of socialization that students will be likely to undergo as the program expands.

Interviews with the participating physicians revealed that the overall flexibility of the program permitted them to define their own roles for themselves to a larger extent. This flexibility was particularly evident the variability in the amount of time they were actually spending with students. It was also found that a nascent form of specialization was emerging among the physicians with concomitant mobility of students among both advisor and non-participating physicians. The majority of interaction among them took place within the advisor-evaluator dyad, a consequence of geographical proximity. The structure of the program with a common year-end exam and individual student-advisor teaching-learning dyads raising the visibility of individual advisors appeared to have positive effects on the notivation of the advisor to insure that his student performed adequately. The basic conclusion to be drawn from the role analysis is that the relative lack of formal role prescriptions permitted a number of informal accomodations among participants. Based on the performance of the students on year end exams, this flexibility, in retrospect, appears to have been positive.

Finally, while there were some areas of concern and dissatisfaction with the program, the advisors and evaluators were, as a group, satisfied with both the form and the content of the program. Of greatest potential concern from an administrative point of view, was the question of the future viability of the unsalaried position in view of the time demands made by the program.

C. Student Roles[*]

1. Formal Organizational Definitions of Student Roles

The extent of formal definition of student roles during the program's first year was minimal. The matching of students and M.D.A.'s was done on a random basis; once a student was formally assigned an advisor, it was understood that this assignment was to be for the duration of the school year. Beyond this formal assignment, definition of roles emerged from the participants themselves, not from the School. The testing procedure was a component of the formal role. Students knew that they would be expected to pass an examination after the completion of each problem unit in the curriculum and that they would be required to take a comprehensive examination in the basic sciences at the end of the year identical to that taken by students in the Chicago program. They also knew that they would be required to take Part I of the National Board Examination.

The first two weeks of the first semester were formally defined for the students. The nature of the program was explained to them and they were exposed to the basics of patient history taking, etc. After this basic orientation period, however, formal definitions of the student roles were at a minimum, and they were allowed to proceed at their own pace within broad limits set by the administrators and their advisors.

2. Role Behaviors

As might be expected, given the relative lack of formal role definition, the actual role behaviors of the students varied considerably in the first year. On the basis of interviews with them at three different points during the year (see Appendix __), it was learned that students spent varying amounts of time with their physician advisors. For any particular student, this time tended to vary between two and eight hours per week, depending upon where he stood in relation to problem units within the curriculum. Students tended to spend more time with their advisors at the beginning and at the end of units than in the middle, when they seemed to spend a great deal more time with text books. There was also variability across students, some generally spending three to five hours per week with their advisors, others spending ten to fifteen. In other words, each student-advisor dyad appeared to negotiate the terms of the role relationship on an individual basis.

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[*] Prepared with the assistance of Martin J. Mistretta.

In contrast to the variability in time spent with advisors, most students appeared to spend reasonably similar amounts of time with the administration. Because of the infancy of the program, administrators were anxious to keep on top of the students' problems and progress and therefore were willing to spend large amounts of time with them. There were a number of informal sessions with the students, particularly during the first semester, in addition to formally scheduled meetings with the student body as a whole every other week. The students viewed this contact very positively and were able to effect a variety of changes in the program as a result. Perhaps the most interesting change was the cancellation of the discipline-oriented seminars with the campus faculty which will be described in more detail in the following section on campus faculty roles and which came about at the urging of the students.

In general, there was very little contact between the students and the campus faculty. The students tended to define the campus faculty in somewhat negative terms and relied much more heavily on their physician advisors for both substantive and social support, a situation which produced a great deal of concern on the part of the faculty.

Relationships with their fellow students, as might be expected, were highly variable. A sociometric analysis of patterns of contact among them revealed that some students were "isolates" and had very little contact with other students, while others had extensive contact. Where "cliques" were found, there appeared to be a tendency for them to emerge around particular problem units in the curriculum and to remain relatively over the school year. In other words, small numbers of students apparently organized on an informal basis to study various problem units as a group, and these groups maintained a degree of continuity over time. Although this situation may not have been anticipated by the administrators, it is an interesting response to the lack of formal definition of the learning process. It appears that at least some of the students adopted roles based on the premise that they could learn from one another. This aspect of the students' role behavioral repertoire has some exciting implications for other kinds of learning settings as well as the one in which it was observed.

The clinical experiences of the students, while variable, appeared to motivate them to spend the necessary time with the books. A number of students spent reasonably large amounts of time in the emergency rooms of the local hospitals in addition to the time they spent with their physician advisors. A number also took the initiative to meet other physicians in the community, both general practitioners and specialists, in order to broaden the range of patient exposure they received. It appears, therefore, that a basic assumption on which the structure of the new program was based -- the assumption that early exposure of students to patients in clinical settings would motivate them to learn the basic sciences through demonstrating their clinical relevance -- was sound.

3. Sources of Satisfaction and Dissatisfaction

A questionnaire was administered at the end of the school year to determine the degree to which students were satisfied or dissatisfied with the program, (see Appendix ___). Some questions dealt with evaluations of the program "in general" while others dealt with more specific aspects. Other questions served to evaluate the effectiveness of the relationship between MDA and BD. The sample size on all items was 15.

Looking first at items addressed to satisfaction with the program in general, the patterns of response found are presented in Table 57.

TABLE 57

STUDENT SATISFACTION WITH GENERAL ASPECTS OF THE PROGRAM

Throughout the year I felt that I was learning the elements of basic science needed for medicine:

Strongly Agree (SA)	Agree (A)	Disagree (D)	Strongly disagree (SD)	No Answer (NA)
13%	60%	20%	0%	7%

The clinical problem method of studying basic medical sciences has given me a more meaningful understanding of these sciences.

(SA)	(A)	(D)	(SD)	(NA)
33%	53%	13%	0%	0%

The whole year was a confusing experience and I have no idea what I should have learned or did learn.

(SA)	(A)	(D)	(SD)	(NA)
0%	0%	47%	47%	7%

I would have preferred not having as much clinical contact in the first year of medical school.

(SA)	(A)	(D)	(SD)	(NA)
0%	7%	33%	60%	0%

If I had it to do over again, I would prefer a more traditional program in the basic medical sciences.

(SA)	(A)	(D)	(SD)	(NA)
0%	0%	33%	67%	0%

Overall, student satisfaction with general aspects of the program was consistently high. Responses to the first item suggest that some were confused at times during the year as to whether they were learning enough basic science material, a confusion which is substantiated by the interview material. Otherwise, however, general satisfaction was uniformly high. With regard to more specific aspects of the program, Table 58 presents the patterns of responses that were found.

TABLE 58

STUDENT SATISFACTION WITH SPECIFIC ASPECTS OF THE PROGRAM

The intensive review sessions were good preparation for the Freshman Comprehensive and the National Board Exam Part I.

(SA)	(A)	(D)	(SD)	(NA)
7%	60%	20%	13%	0%

We should have had more basic science lectures.

(SA)	(A)	(D)	(SD)	(NA)
7%	33%	33%	27%	0%

The bi-weekly discussion sessions with the Dean and his staff should be continued.

(SA)	(A)	(D)	(SD)	(NA)
13%	60%	20%	7%	0%

There was not enough space in the School building for individual study.

(SA)	(A)	(D)	(SD)	(NA)
40%	47%	13%	0%	0%

We should have had more labs in all of the sciences.

(SA)	(A)	(D)	(SD)	(NA)
7%	13%	47%	33%	0%

Supervised and required dissection of the human cadaver should be part of the SBMS-UC program.

(SA)	(A)	(D)	(SD)	(NA)
33%	27%	27%	13%	0%

There were too many seminars in microbiology.

(SA)	(A)	(D)	(SD)	(NA)
0%	0%	47%	53%	0%

At the conclusion of the year, I felt comfortable dealing with patients in the hospital setting.

(SA)	(A)	(D)	(SD)	(NA)
13%	53%	27%	7%	0%

I learned a great deal of pathology this year.

(SA)	(A)	(D)	(SD)	(NA)
0%	20%	47%	33%	0%

The sessions in embroyology were valuable experiences for me.

(SA)	(A)	(D)	(SD)	(NA)
13%	53%	27%	7%	0%

I thought the biochemistry seminars were valuable.

(SA)	(A)	(D)	(SD)	(NA)
7%	20%	40%	13%	0%

The level III exams after each clinical problem helped me to learn pertinent elements of the curriculum.

(SA)	(A)	(D)	(SD)	(NA)
0%	40%	40%	13%	7%

Review of these responses suggests that there was less overall satisfaction with certain specifics of the program than there was with the program as a whole. Those elements of the program which were sources of the greatest amounts of dissatisfaction were the study space available in the School building, the lack of required dissection and the quality of the Level III exams. A number of students also felt that more basic science lecturing should be carried on (an interesting and somewhat puzzling response given their general enthusiasm for the individual study format). Many of these sources of dissatisfaction have been recognized by the administration, however, and steps have been taken to confront them in the second year.

Student responses to a series of questions about their relationships with the physician advisors are presented in Table 59.

TABLE 59

STUDENT SATISFACTION WITH THEIR PHYSICIAN ADVISORS

I wish my M.D. Advisor had known more about basic science.

(SA)	(A)	(D)	(SD)	(NA)
0%	27%	47%	27%	0%

My MD Advisor was happy with me as his advisee.

(SA)	(A)	(D)	(SD)	(NA)
20%	67%	7%	0%	7%

My MD Advisor only served to confuse me about elements of basic science.

(SA)	(A)	(D)	(SD)	(NA)
0%	0%	40%	60%	0%

My M.D. Advisor was a very helpful person.

(SA)	(A)	(D)	(SD)	(NA)
53%	40%	7%	0%	0%

My M.D.Advisor made too many demands on my time.

(SA)	(A)	(D)	(SD)	(NA)
0%	0%	47%	47%	7%

My M.D. Advisor never had enough time to work with me.

(SA)	(A)	(D)	(SD)	(NA)
0%	13%	53%	33%	0%

Students then, seemed extremely pleased with their M.D. Advisors and it seems that his role in their medical school experience was highly successful.

4. Summary

Students were permitted a greal deal of leeway to define the specifics of their role within the new School. As a result, many changes in the formal structure were made during the first year in response to student requests as a modus operandi was sought by the administration. Most notable among these was cancellation of the discipline-oriented seminars.

The flexibility given to the students apparently resulted in a tendency toward informal organization of the learning process, at least among some students, based on a model in which students learned from other students. The implications of this informal model should be explored more fully as a possible alternative to traditional assumptions about how learning can or should take place.

Finally, students expressed consistently high levels of satisfaction with the general aspects of the program and with the role of the physician advisor in the program. Specific sources of dissatisfaction noted have, in many cases, been recognized by the administration and remedial steps have been taken with the second class of students.

D. Campus Faculty Roles[*]

1. Formal Organizational Roles of Campus Faculty

The formal role definition provided to the faculty by the School was minimal. In a report dated March, 1971, entitled "Guidelines for the Development of the Curriculum: School of Basic Medical Sciences -- Urbana", only one reference was made which served to define this role. This reference occurred in a discussion of structured student time within the program itself and read as follows:

> Seminar Instruction. Basic science faculty will have 6-9 hours per week of student contact time in semi-formal instruction in a seminar or group discussion format. Seminar instruction will be discipline-oriented. The subject matter of these seminars will be based on problems raised by students and their advisors in understanding basic sciences. This will allow faculty evaluation of student progress, of the need for laboratories or demonstrations, or other methods to facilitate student learning.

Of all the participants during the School's first year of existence, the campus faculty occupied positions which had the least amount of formal structuring associated with them. As a result, expectations about what they should actually do were unclear, a situation which inevitably led to feelings of dissatisfaction, frustration, and, occasionally, resentment.

2. Role Behavior and Sources of Satisfaction and Dissatisfaction

While theoretically faculty-student contact in seminar discussions was to consume 6-9 hours per week, in actuality the time was less. Since the program was self-paced and provided a great deal of independence to individual students, students were often studying different disease problem areas at any one point in time and any particular seminar topic would consequently be relevant for some students and irrelevant for others. Student dissatisfaction with the arrangement was evidenced by lack of seminar attendance. The students often found the seminars simply a "waste of time" since basic science questions relating to specific clinical problems could more easily be directed to the MDA. About mid-year the students asked the Dean to end the seminars entirely. The request was granted with resultant faculty reaction ranging from apathy to concerned disappointment. After the cancellation of the formal seminar schedule, further seminar scheduling was left to the discretion of the students based on their specific needs.

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[*] Prepared with the assistance of Richard O. Dickinson and Barbara L. Peters.

With the cessation of regularly scheduled seminars, faculty/student interaction, which had never been extensive, decreased markedly since the students very seldom consulted the faculty about specific problems. All but one faculty member expressed disappointment about this situation and the apparent inability to develop a rapport with the medical students. This student rejection, or at least what was perceived to be rejection by the faculty, coupled with ambiguity as to their formal role within the program led to a good deal of dissatisfaction and frustration on their part. The faculty were aware that the students sought answers to basic science questions from their MDA's and this led some faculty to feel that the students looked down at the Ph.D. members of the program or identified too much with the glamour of the MDA clinical setting.

The frustration resulting from role ambiguity and lack of student reinforcement was compounded by the negligible amount of faculty interaction with physician participants or other faculty participants within the program. For most faculty members the only contact with participating physicians was that occurring as a consequence of being on the same curriculum development team or through conferences with participating physicians and faculty held by the Dean to air program "gripes" or dissatisfactions.

A low level of faculty interaction was attributable mostly to geographic separation. Each faculty member was located in his or her respective discipline department separated by at least a floor and frequently by a building. Interaction took place only during faculty or committee meetings and here usually only the most energetic or aggressive faculty members participated. It was these same persons who were chosen to comprise new committees made necessary by growth (i.e., search committee to recommend new faculty) and these select few seemed to suffer less from role ambiguity than the others.

The other more peripherally associated faculty, in terms of involvement in meetings and committees, felt very much like the out group and knew less of what was expected of them. They were communication isolates. From the interviews it was learned that these out group members had a less optimistic outlook for the students' National Board performance and for the future of the school as it was operated, although the degree of discouragement was more for the latter than for the former. They apparently assumed others suffered the same degree of ambiguity.

Role Redefinition

Several changes have come about during the school's second year of operation geared towards reducing faculty frustration or dissatisfaction. As in the first year, regular basic science seminars were scheduled. However, while the students may proceed through the twelve clinical problems at their own pace, they must complete them in a defined sequence. Thus, while a particular seminar may not be relevant to all the students at any one point in time, it will be relevant eventually, and this mandatory ordering of clinical problems has reduced student problem variation considerably.

Another change is the establishment of the role of Campus Faculty Advisor (CFA). In this role each faculty member is assigned four medical students with whom he is to engage in review or remedial basic science work as indicated by student performance on Level III exams. Beyond this, any further CFA role definition is left to the discretion of the faculty member and the individual student.

3. Summary

While none of the organization participants received very elaborate role definition, the campus faculty had the least amount of formal structure to guide and order their behavior. In the fact of little guidance, the faculty adopted roles congruent with their experiences in other settings. They prepared seminars in their disciplines and expected students to see them about academic problems, while carrying out their research at the same time. Redefinition of this role was occasioned by cessation of the seminars during the first semester on the initiative of the students, and little contact between faculty and students subsequently occurred. The process resulting from original role ambiguity, demands for adjustment, and redefinition of their role was a painful and frustrating experience resulting in greater cohesion of the faculty, and, with the help of further definition from the school during the second year, has led to a more active contribution to the medical school by the faculty.

E. Curriculum

1. Introduction

One of the unique aspects of the Urbana program is its approach to curriculum design. The purpose of this section is to present a review of the present structure of the curriculum, a review of the way in which local physicians are contributing to its development and some indication of the directions in which it may be heading.

2. Curriculum Review*

The Urbana curriculum is built around a multiple problem approach to the basic medical sciences. The student is exposed to a particular medical problem in a clinical setting with his advisor; he then proceeds to learn the basic science material which is related to the clinical problem. At an appropriate time, determined by the student in conjunction with his advisor, he takes an examination on the basic science aspects of the problem studied. The examination is given by the student's evaluator who is also a practicing physician in the community. In order to complete the curriculum the student must complete a specified number of problems and pass a college-wide comprehensive examination in the basic sciences.

Included within the curriculum are the following basic science disciplines: anatomy--gross, microscopic, and topical; biochemistry; microbiology; immunology; physiology; pharmocology; pathology--gross and microscopic; neuroscience; genetics; behavioral sciences;histology; and immunology. Within each of these disciplines, the student is expected to: 1) learn the discipline language; 2) be able to interpret data related to the discipline and have a familiarity with current literature; 3) be able to interpret signs and symptoms of diseases in terms of basic science principles;

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* Prepared with the assistance of Barbara L. Peters.

4) achieve minimum passing levels on internal comprehensive examinations and external examinations; and 5) achieve self instructional skills that will allow him to keep up-do-date with passing time.

The curriculum is structured so that each discipline is broken down into components which are identified with one or more disease processes. This structure permits the student to approach the learning process on the basis of his personal experience with diseased patients. The patient's problem is the entry point into principles of basic science germane to the understanding of medicine as a whole and any single clinical problem may serve to identify many principles.

The clinical problems presently included in the curriculum are: 1) inflammation; 2) wound healing; 3) peptic ulcer; 4) diabetes mellitus; 5) coronary heart disease; 6) CVA-mental retardation; 7) upper respiratory infection; 8) emphysema; 9) pregnancy; 10) cancer; 11) drugs; and 12) skin. As the student approaches each clinical problem, he is guided by a clinical problem index in which he is referred to specific content units within the various basic science disciplines. (See Appendix D). Within each of these discipline content units, the student is: 1) told the subject matter of the unit; 2) told the objectives of the unit or what he should expect to have gotten from it once completed; 3) given a list of the key words he should know or be familiar with; 4) presented with a pretest, which will test his familiarity with the subject under consideration; 5) given instructions for study which includes reference guides to books and film; and 6) presented with a self-test or post-test to help him evaluate his level of comprehension for the particular unit. (See Appendix D).

During the course of the school's first year (1971-1972) the sixteen medical students, referred to as B.D.'s, were expected to be exposed to as many as forty clinical problems. However, the mean of problems completed by this first class of B.D.'s was 7.5. Consequently the number of clinical problems to be mastered during the second year (1972-1973) was reduced to twelve and completion of these twelve was made mandatory for all thirty-two B.D.'s now in the program.

Periodic testing has been developed in conjunction with these clinical problems in two formats. First, teaching-learning examinations have been constructed for each discipline unit included within the clinical problem identified for study. These examinations are the pretests and post-tests referred to earlier. Second, periodic internal comprehensive examinations are given after completion of a clinical problem and cover material which students may or may not have covered. These tests are referred to as Level III's and it is at this point in the process of student assessment that computer facilities are used in conjunction with the curriculum. Two-thirds of the students take their Level III exams on the computer while one-third take paper and pencil exams. The content of both sets of exams is exactly the same, only the testing medium is different. The program is concerned with emphasizing the Level III exams as learning devices, and the use of the computer permits immediate feedback and coaching to the student as he is taking the exam. The student using the computer has as much freedom as those students taking the test with paper and pencil to choose the order of questions within each discipline and the right to skip questions and later come back to them. As the student answers each question, the computer scores the answer but gives no feedback. However, upon completion of a specific discipline section, the student is told how he did on the exam and is automatically referred to those questions he missed. At this point, he is given a feneralized coaching routine guiding him to the correct answer. The school's staff feels that this type of testing enhances the rate of learning because of the immediacy of feedback and the external motivation provided for the student to correct his answers and thereby raise his score.

Other computer facilities presently being utilized by the school are: 1) a computer based education system known as PLATO; 2) games simulating clinical encounters known as CASE; and 3) statistical analysis which uses Soupac for Level III item analysis. The development of the PLATO system for this particular program has been rather slow. The package presently includes games for several basic science disciplines designed for undergraduate courses and thus is utilized in this program for remedial work or review. However, during the first semester of the 1972-73 year several staff people have spent a great deal of time working on the design of programs applicable to the curriculum. CASE, Computer Aided Simulation of Clinical Encounters, is a program originally developed by and currently being used at the University of Illinois College of Medicine in Chicago. It consists of 25-30 simulated patient/physician encounters where the medical student at the terminal functions as the doctor whose task it is to diagnose a clinical problem. These simulations are probably not as widely used by the Urbana students as the Chicago students due to the clinical opportunities available to the students in the Urbana curriculum.

The community physicians have played an active part in the program not only in terms of their MDA and MDE roles, but also as members of curriculum development teams. In a traditional medical school program, a student is given extensive exposure to basic science disciplines and expected to learn a great deal more about each and every discipline than he will probably ever need to know for the practice of medicine. It was with this in mind that the role of the community physicians in the curriculum development team came to be defined. If one of the goals of this new school is to produce more medical doctors, of high quality, but in less time, then a logical step is to eliminate the minutiae presently included in traditional basic science training. To accomplish this a curriculum team was created for each of the ten disciplines included in the program.

These teams were composed of basic science faculty members at the university, one or two community physicians, and in some cases an area specialist (such as a practicing pathologist for the pathology units). It was the task of these teams to develop the content units for the particular disciplines to which they were assigned. For some teams, the role of the community physician was one of edition and revision with the basic scientist writing the actual content of the units. For other teams, the physician as well as the basic scientist was involved in the writing of the unit. However, on all the teams the physicians were charged with bringing a clinical orientation to the content unit or eliminating those aspects of the basic science discipline which were minutiae for the purpose of training a medical doctor.

These curriculum development teams were not dissolved upon completion of the content units for the specific disciplines. Rather they are ongoing units charged with evaluation and revision of the units they designed. Their role is particularly important in the evaluation of the Level III questions given to the students in light of their performance and in evaluating the adequacy of the content units in terms of preparing the students to take the National Boards.

The time required from a community physician as a member of a curriculum team varies considerably. While the school estimated a time commitment of approximately ten hours a week, one physician said that some weeks he spent 15-20 hours working on the curriculum while other weeks he spent much less.

A shortcoming of the curriculum development team approach as it now stands is the apparent limited amount of communication and interaction between the physician members and basic science faculty members. While a team physician and an administrator of the school both cited this as a problem, they did not imply a deliberate lack of cooperation but rather a conflict of scheduling. Ideally the bulk of the curriculum development and the revision and evaluation work should take place in joint team meetings; in reality, however, the mechanism of scheduling meeting times convenient to all members is exceedingly difficult. This is particularly true of the community physicians, who are involved in their own practices. Apparently on some teams, the basic scientists have been extremely frustrated by these scheduling problems and have indicated a preference for being permitted to develop the curriculum on their own. A second shortcoming of the CD team approach is that the physicians are often ten years or more removed from their own basic science work and may not be able to accurately assess the depth of basic science work needed by a student to pass the national boards or to give him a strong enough basic science foundation to permit him to enter a medical speciality.

An advantage of the CD team approach, also mentioned by both a participating physician and school administrator, was the opportunity presented to the physician for stimulation in his work and the opportunity to review or relearn specific basic science materials. A team approach also presents to the basic science faculty member an opportunity to get some feedback on the specific elements of his discipline which should be emphasized in a class consisting of pre-med students as opposed to a seminar of basic science graduate students.

An interview was recently conducted with an administrator at the school to assess where the curriculum now stands and where it is going. According to this individual, the curriculum as it now stands is complete, at least in terms of the program's philosophy. However what remains to be done within the confines of this curriculum is revision, resource development, evaluation and assessment. Philosophically the curriculum is solid and it should not be deviated from. Rather a revision should be made of those units or disciplines contained within it which are not achieving the desired results. The strength of the curriculum in its present form for the several disciplines and clinical problems varies. While some sections may be thought of as in their third or fourth stage of revision and consequently quite strong others are not and it is these sections which need to be further revised. In an attempt to secure such revisions, the administration is presently working with the faculty in reviewing the students' performance on the level III exams to attempt to pinpoint the areas which need further work as well as studying the reactions and suggestions made by the students and the MDE's. The Center for Educational Development in Chicago has also been asked to review both the format and the content of the curriculum and to suggest any changes they feel might be useful.

While the curriculum may be philosophically solid, it needs to have certain gaps filled in which can be achieved by further resource development. Right now the program contains students who have to a high degree mastered the art of textbook learning but this probably will not continue. The units or process documents have little content themselves, rather the content is contained within the resources to which the students are referred by the specific units. Consequently, the administration would like to see the resource pool made as large as possible so that a student who does not understand the textbook explanation of a certain aspect of the basic sciences or a medical problem can refer to other media for explanation and clarification. The assumption is that the medium does not help or hurt the good student but it greatly helps the student who has not mastered the textbook learning approach. Currently no such medium exists, although currently in the development stage are computer based education programs with the PLATO system.

Contained within each unit or clinical problem is an evaluation system in the form of pretests and posttests. The student uses these tests to judge whether or not he has achieved a satisfactory level of comprehension of the material contained within the unit. However, in both the pretest and posttest, the best questions tend to be saved for the level III exams and consequently the validity of the post- and pretests is uncertain. Because of this uncertainty a great deal of work needs to be done on evaluation.

3. Summary

The curriculum of the School of Basic Medical Sciences-Urbana is built around a multiple problem approach to the basic medical sciences. The student is exposed to a particular medical problem in a clinical setting with his advisor who is a practicing physician within the community. He then proceeds to learn the basic science materials which are related to this clinical problem. At an appropriate time, determined by the student in conjunction with his advisor, he takes an internal comprehensive examination on the basic science aspects of the problem studied. The examination is given by the student's evaluator who is also a practicing physician in the community. In order to complete the curriculum the student must complete a specified number of problems and pass a college-wide comprehensive in the basic sciences.

Unique to this program's curriculum is the utilization of an educational resource traditionally untapped, that of the community physician. Also unique to this program is the assumption that a student permitted to learn the basic sciences in a clinical problem setting and at his own pace will be highly motivated and that such motivation will facilitate the learning process.

The curriculum as it presently exists is complete, at least in terms of the program's philosophy. However, what remains to be done within the existing curriculum is revision, resource development, evaluation and assessment, and it is within these areas that further curriculum definition should occur.

VII. PROGRAM OUTCOMES

A. Introduction

The outcomes of the program are many and varied. There are outcomes for individuals, for groups of individuals and for the program as a whole. (Kimberly, 1972) This section of the report focuses on two particular kinds of program outcomes, the impact of the program on the continuing education of the participating physicians and student performance.

B. Impact on the Continuing Education of Participating Physicians*

1. Introduction

The importance of developing ways to provide for the effective continuing education of practicing physicians has been emphasized by many observers of the medical care system in this country (e.g. Houser, 1971). At issue is the need, on the one hand, to accelerate the diffusion of new medical techniques and capabilities and, on the other, to improve or at least maintain levels of physician competence.

Traditional efforts to deal with these issues have met with mixed success. One factor limiting their success appears to be the different perspectives on the nature of continuing education characteristic of academic medicine and clinical medicine (Hertzman, 1972). Basic science faculty in traditional programs have tended to emphasize the more academic aspects of the diagnosis and treatment of disease etiology, whereas practicing physicians have stressed problems encountered in the clinical context of medical care delivery. As a result, to many general or family practitioners, and even to certain specialists, the utility of such programs appears to be limited.

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* Prepared with the assistance of Michael A. Counte.

A second problem is that the programs are frequently too difficult for the clinician who has been away from formal training in the basic sciences for a relatively long period of time. (Wolf and Darley, 1965) As a consequence of these problems, many programs of continuing education have been less than successful in helping the practicing physician to keep abreast of various scientific developments and to increase his technical efficiency.

Given the mixed results of traditional approaches and given current trends in the direction of periodic re-examination of physician competence in order to maintain certification, it is clear that new approaches are called for. One goal of the innovative program in Urbana was to construct a role for clinicians in basic medical science education that would not only allow the student to learn in a real-life context, but would also aid the participating physician by providing resources that would encourage him to refresh his own knowledge of the basic medical sciences and inform him of new scientific developments.

2. Procedure and Results

It was felt that it was important to document the impact of the program on the continuing education of participating physicians because of the potential policy implications involved. To this end, a multiple measure approach involving both physician perceptions of program impacts and "objective" measures of these impacts was developed. Underlying this approach was a methodological assumption that concurrent measures of the same phenomenon would offer the best approximation of actual impacts.

To examine the perceptions of the physicians, information from an administrative survey of the participants and from interviews with the same individuals was used. (See Appendices B.4 and C.1). The objective assessment of impacts was based on a Medical Knowledge Self-Assessment Questionnaire developed by the research staff in conjunction with the Dean of the School and administered to all participants and to a control group. (See Appendix B.3).

The results of the interviews indicated that the physicians felt that the program had had positive impacts on their continuing education. A detailed discussion of the nature of these impacts is presented on pages

The results from the administrative survey conducted in July of 1972 generally confirm the impressions emerging from the interviews. These results are presented in Table 60.

TABLE 60

PERCEIVED IMPACT OF NEW PROGRAM ON THE CONTINUING EDUCATION OF PARTICIPATING PRACTICING PHYSICIANS

Question	% agree	% disagree
1. My involvement in the SBMS-U program has enhanced my education in the basic medical sciences.	95	05
2. I spend more time talking with my professional colleagues about basic science than before my involvement in the program.	60	40
3. I have learned significant new aspects of basic sciences by my involvement in the SBMS-U program.	70	30
4. The basic science textbooks given to me by the School are of little use to me.	30	70
5. I feel that I am enhancing my continuing education by my involvement in the SBMS-U program.	100	-
6. In terms of my own professional betterment, I would do better to spend more time reading journals and taking special courses at medical centers instead of trying to help beginning doctors.	65	35
7. I find that I am learning more basic science by interacting with students than by reading alone.	80	20

TABLE 60 (Cont.)

Question	% agree	% disagree
8. The approach of the SBMS-U curriculum in the clinical problem format is providing an opportunity for me to apply new knowledge in the basic sciences to my practice.	95	05
9. My activities in the SBMS-U program provide me with continuing education directly relevant to the needs of my immediate practice.	65	35

Unfortunately, the objective measure of the impacts did not produce useable results. Physicians were either unwilling or unable to respond to the questionnaire. Thus, the original measurement design proved unworkable in practice and had to be revised.

3. Summary

An attempt was made to document the impact of the new program on the continuing education of participating physicians using a multi-measure design. Results from an administrative survey and physician interviews indicated that the participants generally perceived positive influences of the program on their continuing education. Lack of response to an attempt to gather more objective measures of impacts meant that this portion of the design had to be abandoned. The conclusion, therefore, is that, at the perceptual level, the program appeared to produce changes in a positive direction on the continuing education of the participants. The question of the degree to which the program is impacting on actual levels of physician medical knowledge and on the "quality" of their practice remains unanswered, however.

C. Student Performance

1. Introduction

As noted elsewhere in this report, the students in the Urbana program were required to take a year-end comprehensive examination in the basic sciences identical to that required of the Chicago students. On a comparative basis, their performance was noteworthy. On the average, they performed at a slightly higher level than the Chicago students although the very best scores were achieved by students in the Chicago program. Perhaps more significantly, none of the Urbana students failed the examination.

In addition, the Urbana students were required by the Dean of the School to take Part I of the National Board exams in June of 1972. Fifteen of the sixteen students enrolled passed the exams. Noteworthy is the fact that this outcome occurred after only one year of pre-clinical training. On the basis of the overall similarities among socio-demographic characteristics of the Urbana and Chicago students found in analyses described earlier, it is unlikely that the performance of the Urbana group can be attributed to criteria used to select them for the program.

2. Discussion

The year-end performance of the students can be viewed from two perspectives. The first, deliberately conservative, argues that the results indicate that the new program in its first year did not have negative consequences for student performance. Since the structure of the program represents a reasonably significant departure from "business as usual" in basic science education, it is important to know that students enrolled did not appear to be harmed by the departure in terms of performance evaluation criteria generally applied to all medical students.

The second perspective, somewhat less conservative, argues that the level of student performance is an indication that learning is actually enhanced in this type of learning situation. The fact that 15 of 16 students passed Part I of the National Boards suggests that it is feasible to compress the basic science education of medical students into one year, thus reducing by one year the amount of time needed to train physicians. While such a reduction would not significantly increase the production of doctors on a national level in the long run, it would reduce the costs of medical education for the student, thereby possibly encouraging more students from less advantaged socio-economic circumstances to enter the profession. Should this occur, the historical tendency within the medical profession toward a highly skewed distribution of members from the upper strata of the American social structure would be affected. This implication deserves serious consideration, particularly in light of current dissatisfaction with the distribution of medical care across the country.

REFERENCES

Cope, Oliver and Jerrald, Zacharias. Medical Education Reconsidered. Report of the Endicott House Summer Study on Medical Education. (Philadelphia, Pa. : J.B. Lippincott Co., 1966).

Editorial. "What's Wrong with Medical Education". Journal of the American Medical Assoc. 211 (11): 1848-1849, 1970.

Freidson, Eliot. Profession of Medicine. (New York, N.Y.: Dodd, Mead and Company, 1972).

Hertzman, Lee. "Program Development in Basic Medical Sciences at the University of Illinois, Doctoral Dissertation. College of Education. University of Illinois at Urbana-Champaign, June 1972.

Houser, Howard W. Objectives in American Medical Education. Health Care Research Series, #17. (Iowa City, Iowa: The University of Iowa, 1971).

Kimberly, John R. Innovation in Medical Education: A Social Science Perspective. Paper presented at the Third International Conference of Social Sciences and Medicine. Elsinore, Denmark, August 1972.

Mechanic, David. "Social Changes Affecting Medical Training and Practice". in Coombs, Robert H. and Clark, E. Vincent. (Eds.) Psychosocial Aspects of Medical Training. (Springfield, Ill. : Charles C. Thomas, 1971).

Sheps, Cecil G. and Conrad Seipp. "The Medical School, Its Products and Its Problems". Annals of the American Academy of Political and Social Science. 399 (1): 36-48, 1972.

Wolf, Stewart G., Jr. and Ward Darley. (Eds.) "Medical Education and Practice". Journal of Medical Education. 40 (1): 1-410, part 2, 1965.

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APPENDIX A

RESEARCH DESIGN AND PROCEDURES

APPENDIX A

RESEARCH DESIGN AND PROCEDURES*

A. Introduction

In order to analyze the new program it was necessary to construct a research design that would avoid certain inadequacies characteristic of conventional designs used in other kinds of settings and that would offer significant improvements to the field. Specific problems in conventional research encountered while constructing the design included: the lack of use of multi-method approaches to variable measurement (i.e., inclusion of self-report measures with unobtrusive ones, etc.), the lack of longitudinal frameworks, the lack of emphasis on including observable behaviors as criterion or predictor variables, and the fact that feedback is seldom provided to actors involved in the research setting on a systematic and continuing basis.

As a means of dealing with the problems described above, a process research design was developed. Process research in the social sciences can be defined as a systematic attempt to gather data in a particular behavioral setting which can be used, on the one hand, to inform existing theory and on the other hand, to provide feedback to participants regarding their own behavior and the behavior of others in the setting. As such, process research falls somewhere between "pure" research and "action" research in terms of the role of the researcher. In the case of "pure" research, the researcher attempts to remain uninvolved in the behavior setting as far as possible in order to maximize "objectivity" and remove possible sources of bias; in the case of "action" research, the researcher deliberately intervenes (in the behavior setting) as a change agent. The role of the researcher in "process" research is intended to bridge these two extremes and to take advantage of the strengths of each.

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* Prepared with the assistance of Michael A. Counte. Portions of this section have been adapted from J. R. Kimberly, M. A. Counte and R. O. Dickinson, "Design for Process Research on Change in Medical Education", Proceedings of the 11th Annual Conference on Research in Medical Education, Miami Beach, November 1972

If process research as defined above is to be effective, and if it is to maximize the advantages and minimize the disadvantages of both "pure" and "action" research, it is our view that the following considerations should weigh heavily in the formulation of a design:

1) Flexibility of procedures. Techniques used to monitor change should reflect at least in part, the nature of the context being examined. While techniques developed in other contexts may be useful and may yield data which provide comparability, there is often a problem of "fit". This issue is most salient when questionnaires are the technique being used. A second dimension of flexibility is the multi-method approach. Where resources permit, use of multiple techniques is highly desirable both for purposes of triangulation (e.g. Denzin, 1970) and for enhancing the richness of the data. A third dimension of flexibility is situational adaptability. This issue is particularly important when studying change. Very rarely is it possible to develop a design which perfectly anticipates the nature of growth and development in the setting. In process research, a premium is placed on adapting techniques to meet situational demands. One is reminded of a study of leadership and job satisfaction which was abandoned because a strike took place during one phase of the research, "contaminating" the design. In our view, it is at least as useful to regard the strike as a source of data as it is to view it as a source of error variance.

2) The temporal imperative. Process research, by definition, involves diachronic as opposed to synchronic design. Methods used should be based on the premise that it is primarily through a careful monitoring of processes over time that questions of either a theoretical or a more policy-oriented nature associated with change can be answered. Research based on an "in and out" or "one shot" strategy reflects assumptions about the nature of change which are at substantial variance with those underlying process research.

3) Focus on behavior. Data collected by process research should be anchored, insofar as possible, in behavior. In particular, techniques should be used which reflect behavioral adaptation to formal constraints or what Gouldner (1954) and Merton (1957) have called the "unintended consequences" of formal structure. This focus is particularly important in a situation in which planned change is introduced because of the lack of previously established norms and expectations to guide and order the form and content of interaction.

4) Focus on the systemic nature of change. Process research should be based on a recognition of the nature of the interdependencies among the various actors who are a part of the behavior setting. Techniques used, therefore, should be designed to monitor these independencies as carefully as possible and to reflect changes in the relationships among the actors over time.

5) Provision of feedback to the actors. In contrast to the preceding, this consideration is likely to provoke no small amount of controversy. It is our view that one of the most useful

characteristics of process research is the provision of data about their own behavior and the behavior of others in the setting to the actors. Advocates of "pure" research might argue that such an activity will alter the very nature of the phenomenon being studied; however, it is our position that a) providing data to participants and allowing them to evaluate the data themselves does not, in and of itself, put the researcher in the position of becoming a change agent in spite of complex questions which we fully acknowledge regarding decisions about the conditions under which these data are provided, and b) while much has been written about the influence of the researcher on the setting being examined - the so-called "Hawthorne effect" (Katz and Kahn, 1966) - it is very difficult to measure with any degree of precision and thus difficult to evaluate quantitatively. The potential benefits to all concerned appear to outweigh the possible costs of the procedure advocated here.

Given the above general guidelines, specific designs and research procedures were developed for studying the interaction among sets of participants in the program and the SBMS-U program itself. In the following sections the actual procedures used will be discussed in detail.* This discussion will be followed by a consideration of the methodological limitations of the research.

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* Collection of most of the data analysed in this report was funded by other sources and was completed prior to negotiations of the contract which supported preparation of the report itself. Description of the design and procedures is included to permit the reader to evaluate them and to have a degree of familiarity with the nature and scope of the data presented.

B. Practicing Physicians

1. Measurement of Assessments of Program Consequences and Socio-Demographic Characteristics

1.1 Questionnaire Construction

To analyze the input of the local medical community to this new program, as well as the effects of it on first-year MD participants, several kinds of data were collected. First to collect baseline biographical and attitudinal data, a combination interview/mail survey design was used. Questions in the biographical questionnaire were generated by staff members with specific interests and, in certain cases, were based on items used in other studies that had focused on practicing physicians and their receptivity to a change effort (e.g. Coleman, et al, 1966). The final form of this questionnaire that was utilized can be found in Appendix B.1.

In order to measure attitudinal/belief orientation toward the new program it was necessary to develop a separate instrument. Although there were many dimensions of the new program that could have been used as stimuli, it was decided to focus on physician assessments of potential program outcomes. These outcomes, if properly selected and behaviorally anchored, would allow us to elicit both the affective and cognitive orientations of the respondent toward this new program at the time of the survey. In order to generate these program outcomes a group of thirteen, randomly-selected local practicing physicians was selected. In short individual interview sessions conducted in their clinic offices, each of them was asked the following question: "What do you feel are the potential positive and negative outcomes of this new program in medical education?"

Upon completion of these interview sessions in June, 1971 a total of thirty-two potential program eventualities was generated. In the final version of the questionnaire it was necessary to differentiate the extent to which the respondent perceived these possible outcomes as *probable* (i.e., cognitive orientation) and/or *desirable* (i.e., affective orientation). Thus, all of the outcomes were placed into two separate sections: in the first the respondent was asked how probable he felt these outcomes were; in the second he was asked to what extent these outcomes - independent of their probability - were desirable.

The final form of this instrument can be found in Appendix B.2. Since the item population had been developed by clinicians themselves, it was felt that this instrument was relatively specific and closely anchored to the actual concerns of the population to be sampled. This method of generating the item pool was felt to be preferable to any method where members of our research staff alone would try to conceptualize these outcomes.

To refine the measures, a scaling procedure was developed that would allow each respondent to indicate his assessment of the probability and desirability of each potential program outcome. In order to allow for as much individual variation as possible under these circumstances, seven-point scales were used for each set of items ranging from the extreme judgement of very improbable to very probable, and from very undesirable to very desirable. Once these scales had been constructed for each item, the instrument was clear and brief, and closely approximated a *Likert-type scale*. (Likert in Summers, 1970).

The sums of the scores on these scales were taken as crude indicants of the individual's beliefs and attitudes *re*: the program. These index scores offer approximations of both *direction* and *intensity*. It was also necessary, to examine the extent to which each of the items was related to a general system of cognition or affect. To test for the internal consistency of each item to each scale, a form of item-analysis was undertaken to assess the extent to which each item significantly discriminated between high scorers and low scorers on the total scale. Only those items that elicited significantly different responses from those who scored low on the total test were retained in the scales in their final form. Then by summing the scores on each of these items for each individual in the sample, a measure of the strength of an individual's cognitive and affective predispositions regarding this new program was built.

1.2 Pretests and Instrument Refinements

Once the two instruments had been developed, extensive pretesting was carried out. In June of 1971 two groups of local practicing physicians, one consisting of eleven individuals, the other of thirteen individuals, were selected randomly and asked to complete the two questionnaires. Upon completion of the instruments, they were asked to offer any criticism or suggestions that they might have to a research staff member who was present. This process resulted in a number of suggestions and once they had been incorporated, the instruments were complete.

1.3 Sample and Administration

The physicial sample included all practicing physicians in the local area who were contacted in January 1971 regarding their possible participation in the new medical program. This group, which numbered 197, included all of the general practitioners and specialists who were members of the local medical society at that time. A master roster of all these physicians and their addresses was made available by the medical school.

The research design necessitated a comprehensive sample (i.e., entire population). In July of 1971 a letter from the Dean of the Medical School and the President of the local medical society assuring local physicians that the research effort was legitimate and that their responses would be guaranteed anonymity, was mailed to all area physicians. Each of them was subsequently contacted individually by phone and asked when it would be most convenient to drop off the questionnaire and answer any questions he or she might have.

By the end of the summer of 1971 all of the physicians in the sample had been contacted. Each of these doctors was requested to complete the questionnaires at his or her convenience and to return them by mail. Early in September, 1971, the first follow-up of all physicians who had not responded by that time was conducted.

1.4 Sample Returns

A total of 118 practicing physicians completed the two questionnaires. This figure represented 69.3% of the original sample contacted. The original sample itself diminished during the period of data collection from 199 to 171 due to the fact that 28 physicians either died or moved out of the area during the period in which we conducted this study. Table 1 below indicates how many doctors responded at each stage of the survey process.

Table A1

RESPONSE RATES OF PRACTICING PHYSICIANS

Stage	Time	Number	*Percent
Original Survey	8/71-9/71	67	39%
First Follow-up	10/71	34	20%
Second Follow-up	11/71	17	10.3%

* Percentages are of the revised sample size of N=171. (original N=199 minus those who had either died or moved from the area)

In comparison with other studies that have focused on physicians and used a similar survey instrument technique, the final returns were quite favorable. For example, one study (Houser, 1971) achieved a final response rate of 66%, another study (Gross and Grambsch, 1969) acquired 40%, (Prybil, 1970) obtained 50%, while a study by (Hetherinton, 1971) yielded 74%.

To examine possible sources of bias in the respondent population, an analysis of the type and location of practice of respondents was compared to the total population. The results of this analysis are presented in Table 2 below.

Table A2

DISTRIBUTION OF RETURNS BY TYPE AND LOCATION OF PRACTICE

Type	Number Responded	Total	Percent of Total
Specialists	65	101	64%
General Practitioners	53	70	76%
Urban	102	152	67%
*Rural	17	19	89%

* In the rural, outlying areas there were no specialists in practice, only GP's.

On the basis of an examination of Table 2 above, it is evident that no single specific type of practice or demographic area was under-represented in our final return rates. Although there was some variation between the sub-group percentages, in particular from 64 to 89 percent, most of the totals were within close range of our final overall rate of 69%. Thus, the data offered some empirical assurance that the sample returns were not biased by these factors.

An additional analysis of the sample returns was based on whether the individual physician wanted to join the program, and whether he responded to the survey. The analysis was undertaken to determine what bias, if any, might have resulted from one or another group reacting negatively to the program and to the survey, positively to the program and to the survey, or any other combination of these factors. Table 3 below presents the results of the analysis.

Table A3

DISTRIBUTION OF RETURNS BY PROGRAM REACTION

Type	Number Responded	Total	Percent of Total
Wanted to participate	95	133	71%
Did not want to participate	23	38	60%

As is evident in this table we were slightly more successful in eliciting responses from those who were more favorably inclined to the program. It was felt that this 11% difference between the two groups did not constitute a source of significant sampling bias.

Due most likely to the high educational level of individuals in the sample, as well as the likelihood that they had encountered survey instruments on other occasions (e.g., surveys on drug prescriptions from major pharmaceutical companies), the percentage of usuable questionnaires returned was high. The following factors were used as "criteria of usability":

1) that the questionnaires be returned intact with no pages missing and no defacement or mutilation of any of its parts,

2) that the handwriting be legible to members of the staff where the question was either semi-structured or open-ended (e.g., sociometric questions), and
3) that the individual respond to all sections of all relevant questions (i.e., no element of an index could be missing.)

With these factors as guidelines, 113 out of 118 returned questionnaires (95%) were deemed as usable and thus only 5 had to be rejected.

2. Measurement of Pre-Program Basic Medical Science Knowledge

2.1 Questionnaire Construction

At the same time that the biographical and predispositional questionnaires were being developed, a means of measuring the pre-program basic science knowledge of participating physicians and a control group was sought in order to determine baselines against which to assess the impact of the program on the continuing education of physicians. After inspecting various instruments that have been utilized and validated in other settings, a test was developed with the help of the Dean of the new School. The test was a considerably shortened version of that used by the American College of Physicians. Items used were ones which were valid and highly reliable over time according to available statistics. The instrument developed, therefore, was reasonably short and had a high degree of face validity. Thus, we felt it would adequately provide the baseline data we needed to establish if there were any effect of the program on its participants at the end of the first year.

2.2 Pretests/Refinements

All individuals who pretested the biographical and predispositional questionnaires were also asked to inspect this test and offer us any suggestions or criticism they might have regarding its eventual implementation. Although they mentioned it might be too long (it covered all nine basic medical science areas), no specific comments were elicited that would have required our dropping the use of the test at that time or making major changes in its text.

2.3 Sample and Administration

Two groups of the local practicing MD's were chosen to take the test. The first group was composed of all twenty-two practicing physicians in the local area who were designated to work in the program as physician Advisors and Evaluators during the first year, i.e., the treatment group. The other group, the control group, was composed of twenty-two practicing physicians in the local area, matched by area of specialization to members of the treatment group who were not working in the SBMS-U program the first year.

To administer the test, a member of the research staff visited each of these physicians and explained to him the anonymity of his scores and responses. Next, in view of the time required to complete the test, the physicians were told that they might take the tests at their own pace and return them by mail to the project office upon completion.

2.4 Sample Returns

As was noted earlier in the report, the results of this attempt to establish knowledge baselines were disappointing. Based on feedback received from many physicians, the test was too long and difficult for the vast majority of the clinicians contacted. This matter and its implications for the collection of such cognitive data is discussed at length in a section of this report concerned with the impact of the SBMS-U program on physician continuing education.

3. Contextual Analysis of Participants

3.1 Interview Schedule

The survey instruments described above provided certain kinds of important baseline information on area physicians. However, the process research design described earlier required that certain kinds of data be collected over time from program participants. In order to monitor various aspects of the development of the program, it was decided that all participants should be interviewed. Accordingly, an interview schedule (see Appendix C.1) consisting of both closed and open-ended questions was developed for the participating physicians. Various questions that were designed to probe for elements of both satisfaction and dissatisfaction with the program and relationships with other participants were included in an attempt to document any unintended consequences of formal structure, that is, effects of the program that were not anticipated by the program's administration.

3.2 Sample and Returns

The sample for these interviews consisted of all MDA's and MDE's in the program. In February of 1972 each was contacted and asked if he might meet with one of the interviewers for approximately one hour to discuss his impressions of the program. After four weeks 15 interviews were completed. While it would have been desirable to interview all 20 physician participants, the information gathered from those interviewed provided invaluable insights into various aspects of the program's development.

4. Administrative Survey of Participants

In addition to the various kinds of data collected by the staff of the Health Services Research Program, data were made available for analysis and inclusion in this report by the staff of the medical school itself. While the research activities of the school were, of necessity, somewhat limited in scope, a survey of participating physicians was made. Although our staff was not involved in the development or administration of the instrument, the kinds of information it provided proved useful.

4.1 Sample and Administration

The survey was mailed to all physician Advisors and Evaluators (n=20) in February of 1972 and again in June of 1972. After follow-ups, the return rate for both administrations was 100%, a fact which indicates a greater propensity on the part of the participating physicians to cooperate with an administrative as opposed to a purely research survey.

C. Student Participants

1. Measurement of Pre-Program/Social Characteristics

1.1 Questionnaire Construction

In addition to examining physician input into the SBMS-U program, the input of the students was analyzed. Two sets of questionnaires were developed for this purpose: the first concerned information about the socio-economic background of the student, the extent to which he or she had been socialized into the profession, the extent of his or her knowledge about what to expect in medical school, and goals for the future; the second concerned cognitive and affective orientations toward the consequences of the program.

The first of these questionnaries (See Appendix B5) is similar in some ways to the one used by researchers at the Cornell University School of Medicine in the middle 1950's (Merton, 1957) because of the possibility that presented itself to replicate certain aspects of this well-known and respected study of the medical education process. The second questionnaire was identical to that administered to the physicians.

1.2 Sample and Returns

Both of these questionnaires were mailed to all of the 16 students in the first year's class during the late summer of 1971. The response rate was 100%.

2. Analyzing the Interaction of Medical Students and the Program

2.1 Interview Schedules

In order to monitor the effects of interaction of these students over time with other program actors as well as the SBSM-U program itself, an interview strategy similar to that used with the physicians was adopted. Since our interests were generally focused on the adaptation and progress of these students, the questions covered a wide range. Some questions were directed toward how he spent his time, others to perceived sources of satisfaction and dissatisfaction with the program, etc. Feedback from the first wave of interviews was incorporated into the second wave. The two schedules that were used can be found in Appendices C3a and C3b.

2.2 Sample and Administration

Each student in the class was interviewed three times during the school year (Sept., Dec., and May, 1971-1972) by a member of the research staff. To enhance continuity, each interviewer was assigned four students and interviewed the same four students on each occasion. The original schedule was used during the first-wave in September, while the revised schedule was used in the remaining two waves.

The interview data were collected from every member of this sample at every point in time. The data that were generated offer some interesting insights into various questions, especially student assimilation into the profession and determinants of performance. Where relevant, this material is presented and explicated in this report.

3. Measures of Expectations of Roles of Selves and Physician Advisors (MDA's)

3.1 Questionnaire Construction

Prior to the start of the program, each member of the research staff was asked to develop a list of role behaviors that a new medical student in the program might be expected to engage in and a similar list that a student might expect his physician advisor to engage in. This procedure was followed due to the fact that there were no medical students on campus to generate the items. The large number of student role behavior items generated was reduced to seventeen during the course of several discussions among the staff; similarly, the number of MDA role behavior items was reduced to eighteen. The instruments developed through this process can be found in Appendix B.6.

3.2 Sample and Returns

The two instruments were administered to the students during their first week on campus in September, 1971, at a meeting with the research staff. All sixteen of the students completed both questionnaires.

4. Administrative Survey

In addition to the various kind of data collected by the staff of the Health Services Research Program, data were made available for analysis and inclusion in this by the staff of the medical school itself. For administrative purposes, a questionnaire was developed by the school to obtain feedback from the students regarding certain aspects of the program. The questionnaire was mailed to the students at the end of the school year and was returned by all but one student (see Appendix B7).

D. Campus Faculty

Because the campus faculty constituted an important set of actors in the program, their perceptions of the development of the program were an integral part of the research design. An interview schedule was developed and each member was interviewed individually in May of 1972, near the end of the school year. The interview schedule used can be found in Appendix C.2.

E. Program Administrators

The Assistant Dean of the School was interviewed every other week by a member of the research staff. The purpose of these unstructured interviews was to keep the staff abreast of developments in the program and to alert them to any possible incidents which might warrant a research intervention. In addition, at these bi-weekly sessions the School was kept apprised of the activities of the researchers.

F. Methodological Limitations

There are two factors which must be considered in evaluating the implications of the findings generated by the design and procedures described in the preceding sections of this appendix. First, the design for the study is based upon an assumption that it is primarily through monitoring processes over time that the most complex and important questions of a theoretical and more policy-oriented nature can be answered. The results discussed in this report are based on the first year of operations of the new school. While it is true that many of the results are based on data gathered during the course of that year and have therefore been collected over time, it is questionable to what extent they might be replicated in succeeding years. In many ways the data analyzed in this report are of higher quality than much of the data that are available elsewhere. The project itself was carefully designed and the research carefully executed. One must be cautious, however, in interpreting the meaning of the findings. It is conceivable, for example, that the remarkably strong performance of the students was at least in part a function of the fact that everyone was concerned that they all perform well and everyone expended more time and energy than they might have under more ordinary circumstances to facilitate student performance.

In no way is it being suggested that one year period for which this report was written is invalid as an indicator of what might be reasonably expected in the future. What is being suggested is that a similar monitoring process carried out over a longer period of time, including time during which roles have become more clearly defined, norms have developed more fully, and program structure has become more stable, would yield information which, in conjunction with that from the first year, might provide a more solid basis for conclusions.

The second factor which must be considered is the size of the first year's class and of the physician Advisor and Evaluator group. The class had 16 members, and there were a total of 20 MDA's and MDE's. The small size of the samples not only limits the kinds of statistical manipulations that can be performed with the data but also restricts the generalizability of the findings somewhat. Given that the program is designed to expand to at least four times its original size, increasing both the number of students and the number of practicing physicians involved by that factor, one might expect that the dynamics within the program may well change.

Taken together, these two factors merely suggest that the reader be aware of how they might vary were the study to cover, say the first two or three years of the program's operation as opposed to the first year only.

REFERENCES

Coleman, James S. Et Al. Medical Innovation. (Indianapolis: The Bobbs-Merrill Company, Inc., 1966).

Denzin, Norman K. The Research Act. (Chicago: The Aldine Press, 1970).

Gouldner, A. W. Patterns of Industrial Bureaucracy. (New York: The Free Press, 1954).

Gross, Edward and Grambsch, Paul V. University Goals and Academic Power. (Washington, D. C.: American Council on Education, 1969).

Hetherington, Robert W. "Local and Cosmopolitan Physicians". Canadian Review of Sociology and Anthropology. 8 (1): 32-47, 1971.

Houser, Howard W. Objectives in American Medical Education: A National Survey of Medical Faculty Opinions. Monograph number 17. Health Care Research Series. (Iowa City, Iowa: The University of Iowa, 1971).

Katz, Daniel and Kahn, Robert L. The Social Psychology of Organization. (New York: John Wiley & Sons, 1966).

Merton, Robert K. Social Theory and Social Structure. (Glencoe, Ill.: The Free Press, 1957).

Prybil, Lawrence D. "Physicians in Large, Multi-Specialty Groups: An Investigation of Selected Characteristics, Career Patterns, and Opinions." Ph.D. diss., The University of Iowa, 1970.

Summers, Gene F. (Ed.). Attitude Measurement. (Chicago: Rand McNally & Company, 1970).

APPENDIX B

QUESTIONNAIRES

B.1 PHYSICIAN BACKGROUND/BIOGRAPHICAL QUESTIONNAIRE

This questionnaire primarily concerns practicing physicians in Champaign County and Danville who were asked to participate in the new School of Basic Medical Sciences program at the University of Illinois. Please do not sign your name on the questionnaire. All of the information in this questionnaire will be held in strictest confidence. Responces will be aggregated when published so that no individuals will be identifiable. Please attempt to answer all questions, but if you do not know the information requested, simply leave the answer-area blank. Should you have any additional comments, please place them on the back of any of the pages in this questionnaire.

(1) A. Which of the following best describes your present involvement in medicine?

a. specialist ______ c. resident ________

b. intern __________ d. family or general practicioner ______

B. If you are a specialist, what is your field? ______________________________

(2) A. Are you affiliated with any hospital or clinic? YES ____ NO ____

B. IF YES: how many:

a. hospital(s) ____________

b. clinic(s) ____________

(3) How long have you been practicing in Champaign county? ________________

(4) Of the medical journals you receive regularly (i.e., at least quarterly), in what per cent do you read at least one article?

a. 0-25% __________

b. 26-50% __________

c. 51-75% __________

d. 76-100% __________

(5) Please indicate your original source of information regarding the new medical program.

____

____

When did you inititially become aware of the program (planning or idea stage)? Please offer a close approximation by (month/year) or this awareness.

____

(6) A. Are you a member of any professional societies other than the Champaign County Medical Society? YES ______ NO ______

B. IF YES: Please list.

____

____

____

____

____

(7) A. If you have decided not to participate in the program, what factors led to that decision?

____

____

____

____

____

B. Please rank these factors in order from one (most important factor) to four (least important factor).

a. ____________________

b. ____________________

c. ____________________

d. ____________________

(8) A. Have you attended any conventions or meetings of professional societies during the last twelve months? YES _______ NO _______

B. IF YES: Please indicate the type and number.

type	number attended
local (eg., county)	
state	
regional	
national	
international	

(9) A. Aside from official out-of-town meetings, do you ever drop in at leading hospitals or medical centers, or call on former classmates associated with them, when you are in other cities? YES _______ NO _______

B. IF YES: How frequently, over the last year? ____________________________

C. In what region(s) of the country?

Northeast _______

Southeast _______

Midwest _______

Southwest _______

Far West _______

(10) A. Is there any particular city, school, hospital, or other center that you look to as a source of medical knowledge for yourself? YES ____ NO ____

B. IF YES: Please name. ______________________________

____

____

(11) A. Please indicate below how important the following sources of information were to you in regard to your decision to participate or not in the new medical program. (Circle number which best indicates your feelings.)

Source of information:	of no importance				of great importance
professional journals	1	2	3	4	5
mass media	1	2	3	4	5
colleagues	1	2	3	4	5
medical administrators	1	2	3	4	5
government officials	1	2	3	4	5
non-physician medical personnel	1	2	3	4	5
non-physician friends	1	2	3	4	5
relatives	1	2	3	4	5

B. Please indicate any other sources of information not listed above.

____

____

____

____

____

(12) A. What medical school did you attend? ____________________

B. In what year did you graduate? ____________________

(13) A. Did you serve as an intern in a hospital? ____________________

B. IF YES: Which one? ____________________

C. What city? ____________________

(15) How large was the town in which you grew up? (through age 12)

a. 5,000 or less ________
b. 5,000-25,000 ________
c. 25,000- 100,000 ________
d. over 100,000 ________
e. rural area ________
f. more than 3 changes of residence during childhood ________

(16) What was your father's occupation? ____________________

(17) Are you married? ____________________

(18) What is your age? ____________________

(19) Below, please name three **physicians** that you turn to most often for:

a. advice and information about medical affairs and/or problems.
    1. ______________________
    2. ______________________
    3. ______________________

b. discussion of medical affairs and/or problems.
    1. ______________________
    2. ______________________
    3. ______________________

c. friendship.
    1. ______________________
    2. ______________________
    3. ______________________

(20) What, if any, are the chief advantages of Champaign County as a place to practice medicine? ____

____

____

____

____

(21) When you are with other doctors socially (eg., events which are informal gatherings), do you like to talk about medical matters?

a. yes __________

b. don't care _____

c. no __________

(22) How much professional contact do you generally have with:

a.	other physicians in the hospital outside of work?	very little	1	2	3	4	5	a great deal
b.	other physicians in your community?	very little	1	2	3	4	5	a great deal
c.	other physicians in your region of the country?	very little	1	2	3	4	5	a great deal
d.	other physicians throughout the country?	very little	1	2	3	4	5	a great deal

(23) With whom, excluding your family, do you actually spend more of your free time -- doctors or non-doctors?

a. doctors ______

b. 50/50 ______

c. non-doctors ___

(24) Do you belong to any club or hobby group composed mostly of doctors?

YES ________ NO ________

(25) Who are your three best friends? What is the occupation of each?

name	occupation
a. ________________________	a. ________________________
b. ________________________	b. ________________________
c. ________________________	c. ________________________

(26) During the past six months have you told anyone about some new technique or developments in medicine? YES _______ NO _______

(27) Please rank (by circling) how innovative you feel you are compared to:

A.	colleagues in your special area	much less	1	2	3	4	5	much more
B.	others in the field of medicine generally	much less	1	2	3	4	5	much more

(28) What personal factors do you feel lead to:

A. your seeking-out of new practices or techniques	of little importance				of great importance
______________________	1	2	3	4	5
______________________	1	2	3	4	5
______________________	1	2	3	4	5
______________________	1	2	3	4	5

B. your attempting to use new practices or techniques?	of little importance				of great importance
______________________	1	2	3	4	5
______________________	1	2	3	4	5
______________________	1	2	3	4	5
______________________	1	2	3	4	5

(29) A. What factors, if any, prevent physicians from seeking-out new practices or techniques?

		of little importance				of great importance
A.	________________	1	2	3	4	5
	________________					
B.	________________	1	2	3	4	5
	________________					
C.	________________	1	2	3	4	5
	________________					

B. What factors, if any, prevent physicians from using new practices or techniques?

		of little importance				of great importance
A.	________________	1	2	3	4	5
	________________					
B.	________________	1	2	3	4	5
	________________					
C.	________________	1	2	3	4	5
	________________					

(30) Please indicate your opinion regarding the following statements by circling the appropriate numbers.

A.	Too much attention is upon trying new techniques before adequate understanding of the prospects of present techniques.	strongly disagree 1	2	3	4	strongly agree 5
B.	New techniques and practices are highly desirable in the delivery of quality medical care.	strongly disagree 1	2	3	4	strongly agree 5
C.	New techniques and practices are highly important in the delivery of quality medical care.	strongly disagree 1	2	3	4	strongly agree 5

D. In medicine there are few payoffs for devoting attention to seeking-out new techniques and ideas.

strongly disagree				strongly agree
1	2	3	4	5

E. In medicine there are few payoffs for devoting attention to using new techniques and ideas.

strongly disagree				strongly agree
1	2	3	4	5

(31) Do you have the feeling that you are generally regarded by your colleagues as a good source of advice about new developments in medicine?

A. not very good 1 2 3 4 5 quite good

B. I am unsure ___________

B.2 PHYSICIAN ASSESSMENT OF CONSEQUENCES QUESTIONNNAIRE

On the following pages you will find a series of statements concerning the new medical education program starting on the Champaign-Urbana campus in Sept., 1971. These statements describe potential consequences of such a program and were elicited from a sample of physicians in Champaign County during interviews held approximately one month ago.

In the first segment of this questionnaire we would like your opinion concerning the likelihood that each of the consequences will occur as a result of the new program. We realize that before the program starts, it is often difficult to make judgments in many cases. However, we would like you to give us your best estimate based upon what you now know about the program and your past experience in medicine.

After reading each statement, please put an X in the space which best indicates your estimate of the likelihood that the consequence listed will, in fact, occur as a result of the new program.

The following provides an example of the type of scale on which we would like you to record your estimates.

decreasing likelihood ←——— ———→ increasing likelihood

very unlikely :___:___:___:_X_:___:___:___: very likely

You should mark the middle space on the scale if you feel that the consequence is neither likely nor unlikely; i.e., "maybe yes, maybe no." As the example scale indicates, as you move in either direction from the center of the scale, the strength of likelihood (or "unlikelihood") increases.

There are, of course, no right or wrong answers.

Thank you for your cooperation.

As a result of the new program, what is the likelihood that:

very ←—————— ——————→ very
unlikely :___:___:___:___:___:___:___: likely

****

1. Students will be better motivated because they can see the importance of "classroom" knowledge in their practical experiences. :___:___:___:___:___:___:___:

2. Highly qualified medical students will be attracted. :___:___:___:___:___:___:___:

3. The many demands on their time will prevent students from absorbing sufficient knowledge to pass first year comprehensive exams. :___:___:___:___:___:___:___:

4. Friction may develop between paramedical personnel and the students. :___:___:___:___:___:___:___:

5. Evaluative information on performance (feedback) will be provided to both students and physicians by others in the program. :___:___:___:___:___:___:___:

6. Physicians will be motivated to maintain continuing education. :___:___:___:___:___:___:___:

7. Better medical facilities will be developed. :___:___:___:___:___:___:___:

8. The calibre of medicine will be improved because teaching will also add to the physician's knowledge. :___:___:___:___:___:___:___:

9. Champaign County physicians will become more "visible" to physicians elsewhere. :___:___:___:___:___:___:___:

10. More physicians will be attracted to the area who otherwise would not have come. :___:___:___:___:___:___:___:

11. A closer student-physician relationship will be created than exists in traditional programs. :___:___:___:___:___:___:___:

very unlikely :___:___:___:___:___:___:___: very likely

12. The quality of students' education may be poorer than in traditional programs. :___:___:___:___:___:___:___:

13. Some students' practical experience will not be as fruitful as possible because some physicians don't have sufficient teaching abilities. :___:___:___:___:___:___:___:

14. More highly qualified physicians (higher scores on state board exams) will be produced. :___:___:___:___:___:___:___:

15. Students will raise questions and provide feedback to physicians which might alter and improve medical practices. :___:___:___:___:___:___:___:

16. Students will achieve more involvement, understanding, and respect for the patient. :___:___:___:___:___:___:___:

17. Students will gain more practical knowledge sooner by being able to examine patients earlier in their education. :___:___:___:___:___:___:___:

18. Physicians may eventually become bored doing the same things over again, such as teaching new medical students. :___:___:___:___:___:___:___:

19. Participating physicians produced by the program will leave the state to practice elsewhere. :___:___:___:___:___:___:___:

20. The program will motivate physicians to continually review basic sciences. :___:___:___:___:___:___:___:

21. There will be coordination problems in "lining up" a sufficient range of patients' illnesses for the student to study. :___:___:___:___:___:___:___:

22. Teaching abilities of physicians will be improved. :___:___:___:___:___:___:___:

very unlikely ←——→ very likely
:___:___:___:___:___:___:___:

23. Physicians will be more aware of "why" they are doing things rather than just doing them out of habit (because they will be providing an example for the students). :___:___:___:___:___:___:___:

24. Physicians will become aware of recent medical literature. :___:___:___:___:___:___:___:

25. The existing health care services will be broadened even further. :___:___:___:___:___:___:___:

26. Small town practices will be encouraged. :___:___:___:___:___:___:___:

27. Strong competition might develop between practicing physicians and academic physicians for "control" of the students' program. :___:___:___:___:___:___:___:

28. Patients might feel like guinea pigs, or a certain brittleness might develop in some practices (i.e., in gynecology a patient might resent a young male as an observer). :___:___:___:___:___:___:___:

29. Others (i.e., nurses, technicians) may be induced to introduce and participate in new methods of medical education in their own fields. :___:___:___:___:___:___:___:

30. Program-related activities may take up too much of the physician's time. :___:___:___:___:___:___:___:

31. Patients will gain insight into the complexities of medical education. :___:___:___:___:___:___:___:

32. A financial drain on the state will be produced. :___:___:___:___:___:___:___:

Now that you have given us estimates of the likelihood that these consequences will occur, we would like a slightly different sort of information. Some of the consequences we have listed are desirable while others are probably undesirable. Moreover, different people will perceive these consequences differently; i.e., some physicians may view a particular consequence as only moderately desirable while others may view that same consequence as highly desirable. Because of this, we would like you to indicate the desirability (for you personally) of each of the following outcomes. Rather than worry about the likelihood of the outcome, please indicate how desirable the outcome would be if it were to occur.

The following is an example scale:

decreasing desirability ← → increasing desirability

very undesirable :____:____:____:_X__:____:____:____: very desirable

Again, an X in the middle space of the scale would indicate a neutral evaluation; i.e., an outcome that is neither desirable nor undesirable.

As a result of the new program, how desirable (for you personally) is it that:

very ←——————— ———————→ very
undesirable :___:___:___:___:___:___:___: desirabl

****

1. Students will be better motivated because they can see the importance of "classroom" knowledge in their practical experiences. :___:___:___:___:___:___:___:

2. Highly qualified medical students will be attracted. :___:___:___:___:___:___:___:

3. The many demands on their time will prevent students from absorbing sufficient knowledge to pass first year comprehensive exams. :___:___:___:___:___:___:___:

4. Friction may develop between paramedical personnel and the students. :___:___:___:___:___:___:___:

5. Evaluative information on performance will be provided to both students and physicians by others in the program. :___:___:___:___:___:___:___:

6. Physicians will be motivated to maintain continuing education. :___:___:___:___:___:___:___:

7. Better medical facilities will be developed. :___:___:___:___:___:___:___:

8. The calibre of medicine will be improved because teaching will also add to the physician's knowledge. :___:___:___:___:___:___:___:

9. Champaign County physicians will become more "visible" to physicians elsewhere. :___:___:___:___:___:___:___:

10. More physicians will be attracted to the area who otherwise would not have come. :___:___:___:___:___:___:___:

11. A closer student-physician relationship will be created than exists in traditional programs. :___:___:___:___:___:___:___:

very ⟵ ⟶ very
undesirable :___:___:___:___:___:___:___: desirabl

12. The quality of students' education may be poorer than in traditional programs. :___:___:___:___:___:___:___:

13. Some students' practical experience will not be as fruitful as possible because some physicians don't have sufficient teaching abilities. :___:___:___:___:___:___:___:

14. More highly qualified physicians (higher scores on state board exams) will be produced. :___:___:___:___:___:___:___:

15. Students will raise questions and provide feedback to physicians which might alter and improve medical practices. :___:___:___:___:___:___:___:

16. Students will achieve more involvement, understanding, and respect for the patient. :___:___:___:___:___:___:___:

17. Students will gain more practical knowledge sooner by being able to examine patients earlier in their education. :___:___:___:___:___:___:___:

18. Physicians may eventually become bored doing the same things over again, such as teaching new medical students. :___:___:___:___:___:___:___:

19. Participating physicians produced by the program will leave the state to practice elsewhere. :___:___:___:___:___:___:___:

20. The program will motivate physicians to continually review basic sciences:___:___:___:___:___:___:___:

21. There will be coordination problems in "lining up" a sufficient range of patients' illnesses for the student to study. :___:___:___:___:___:___:___:

22. Teaching abilities of physicians will be improved. :___:___:___:___:___:___:___:

←——→

very undesirable :___:___:___:___:___:___:___: very desirab

23. Physicians will be more aware of "why" they are doing things rather than just doing them out of habit (because they will be providing an example for the students). :___:___:___:___:___:___:___:

24. Physicians will become aware of recent medical literature. :___:___:___:___:___:___:___:

25. The existing health care services will be broadened even further. :___:___:___:___:___:___:___:

26. Small town practices will be encouraged. :___:___:___:___:___:___:___:

27. Strong competition might develop between practicing physicians and academic physicians for "control" of the students' program. :___:___:___:___:___:___:___:

28. Patients might feel like guinea pigs, or a certain brittleness might develop in some practices (i.e., in gynecology a patient might resent a young male as an observer). :___:___:___:___:___:___:___:

29. Others (i.e., nurses, technicians) may be induced to introduce and participate in new methods of medical education in their own fields. :___:___:___:___:___:___:___:

30. Program-related activities may take up too much of the physician's time. :___:___:___:___:___:___:___:

31. Patients will gain insight into the complexities of medical education. :___:___:___:___:___:___:___:

32. A financial drain on the state will be produced. :___:___:___:___:___:___:___:

B.3 MEDICAL KNOWLEDGE SELF-ASSESSMENT TEST

As you are probably aware, the American College of Physicians has, in cooperation with the National Board of Medical Examiners, developed a "Medical Knowledge Self-Assessment Program." With their permission, we have selected a representative sample of the questions covering nine areas of medicine and would greatly appreciate your responses to these items on the following pages.

We wish to stress as strongly as possible that you will, in no way, be evaluated as an individual physician in any of the areas. The items we have selected, in fact, to a large degree were very difficult to answer according to national norms. Since we have selected the questions on this basis, it is virtually impossible to say that any individual physician is below the average since even highly knowledgeable physicians would, over all, score quite "low" on these items.

Our purpose for giving this questionnaire is to determine if, and how much, the new medical education program in which you will participate enhances knowledge in these areas above the national norms.

Finally, we wish to stress that the information which you provide us on this and other forms are held in the strictest confidence by our research group. The information from individual respondents is not reported in any form to outside groups. Only group data is so released. We will, of course, be happy to discuss with you on a private basis, any questions you might have regarding your personal responses.

I wish to thank you in advance for your cooperation. We realize that this takes time to complete but we feel that the potential returns to individual physicians, medical education, and the community in general, are worth the effort. If you have any questions or comments concerning this material, please feel free to call me at any time.

ENDOCRINOLOGY AND METABOLIC DISEASE (Part I)

Section A

Directions: Each of the questions or incomplete statements below is followed by five suggested answers or completions. Circle the one that is BEST in each case.

1. A young man with severe potassium depletion was found to have increased aldosterone production but a normal blood pressure. The most likely diagnosis would be

   a. adrenal hyperplasia

   b. adrenal tumor

   c. juxtaglomerular hyperplasia (Bartter's syndrome)

   d. Cushing's syndrome

   e. renal tubular acidosis

2. Each of the following findings is a feature of untreated primary Addison's disease in women EXCEPT

   a. increased plasma ACTH

   b. hypotension

   c. impaired taste perception for saline

   d. decrease in axillary and body hair

   e. increased areolar pigmentation

3. Which of the following may reveal latent hyperparathyroidism by producing hypercalcemia?

   a. Digoxin (Lanoxin)

   b. Insulin

   c. Spironolactone

   d. Thiazides

   e. Oral phosphate therapy

ENDOCRINOLOGY AND METABOLIC DISEASE (Part II) Section A

Directions: For each of the questions or incomplete statements below, ONE or MORE of the answers or completions given is/are correct. Circle one or all of the answers which you feel is/are correct.

1. A 48-year-old woman whose only complaints are weight loss, nervousness and a small goiter, is admitted to the hospital for biopsy of a mass in the breast. Four hours after surgery, she is found to be irrational and markedly agitated. Vital signs include a pulse rate of 155/min, blood pressure of 80/60 mm Hg and temperature of 41.1 C (106.0 F).

   Therapy at this time should include intravenously administered

   a. propranolol hydrochloride (Inderal)

   b. hydrocortisone phosphate

   c. iodides

   d. levarterenol bitartrate (Levophed)

2. Calcitonin

   a. causes hypocalcemia

   b. causes hypophosphatemia

   c. is secreted by parafollicular cells of the thyroid

   d. inhibits bone resorption

RENAL DISEASE (Part I)

Section A

Directions: Each of the questions or incomplete statements below is followed by five suggested answers or completions. Circle the one that is BEST in each case.

1. Metabolic alkalosis and hypokalemia occur after ingestion of
   - a. large quantities of cough syrup containing glycyrrhiza fluid extract
   - b. paraldehyde
   - c. ethylene glycol
   - d. large quantities of bromides
   - e. large quantities of aluminum hydroxide

2. A 53-year-old man with chronic pulmonary disease has been known to have chronic hypercapnia and cor pulmonale for several months. He has been treated with expectorants and bronchodilators, and has been on a low-salt diet. Examination disclosed no abnormalities except for findings indicative of emphysema.

Laboratory studies:

Hemoglobin	14.2 gm/100 ml
Hematocrit	48 per cent
Serum electrolytes:	
Sodium	138 mEq/l
Potassium	5.8 mEq/l
Chloride	96 mEq/l
Bicarbonate	35 mEq/l
pCO_2 arterial	68 mm Hg
Blood pH	7.32
Urine:	
Sodium	2 mEq/24 hr
Potassium	65 mEq/24 hr
Chloride	1 mEq/24 hr

The patient was ventilated and the pCO_2 decreased to 40 mm Hg and remained there. The low-salt diet was continued.

Electrolyte findings that might be anticipated include:

- a. Serum bicarbonate concentration and pH will return to normal in 1 to 2 days
- b. Serum bicarbonate concentration will return to normal in 1 to 2 days but pH will remain low
- c. Serum bicarbonate concentration will slowly increase to concentrations of 35 to 40 mEq/l over the next 1 to 2 days
- d. There will be little change in the serum bicarbonate concentration, and the blood pH will increase to a frankly alkalotic level
- e. None of the above

RENAL DISEASE (Part II)

Directions: For each of the questions or incomplete statements below, ONE or MORE of the answers or completions given is/are correct. Circle all or one of the answers which you feel is/are correct.

1. A boy was shorter in stature than his classmates but was otherwise well until his seventeenth year. He then developed bone pain and was found to have a generalized decrease in bone density on roentgenographic examination. Physical examination showed no evidence of band keratopathy or other abnormalities. A plain roentgenogram of the abdomen showed the kidneys to be smaller than normal. Blood pressure was 110/60 mm Hg.

   Laboratory studies:

Hematocrit	30 per cent
Hemoglobin	10.5 mg/100 ml
Blood urea nitrogen	120 mg/100 ml
Serum creatinine	10.8 mg/100 ml
Serum calcium	9.5 mg/100 ml
Serum inorganic phosphorus	8.2 mg/100 ml
Serum electrolytes:	
Sodium	120 mEq/l
Potassium	4.8 mEq/l
Chloride	82 mEq/l
Total CO_2 content	10 mEq/l
Blood pH	7.19
Urine:	
Sodium	85 mEq/l
Volume	1200 ml/24 hr

   Which of the following statements is/are correct?

   a. The normal serum calcium in the face of advanced renal failure is suggestive of secondary hyperparathyroidism

   b. A bone biopsy would probably show a combination of osteomalacia and osteitis fibrosa

   c. Marked acidosis and renal sodium wasting support a diagnosis of medullary cystic disease

   d. Parathyroidectomy is warrented to slow further progression of renal disease

2. An impaired ability to excrete an orally administered water load is associated with

   a. adrenal insufficiency

   b. portal cirrhosis with ascites

   c. anterior pituitary insufficiency

   d. Cushing's syndrome

3. Which of the following complications is/are common to thiazides, furosemide (Lasix) and ethacrynic acid (Edecrin), when used as diuretics?

   a. Potassium depletion

   b. Hyperuricemia

   c. Alkalosis

   d. Hyponatremia

NEUROLOGY (Part I)

Section A

Directions: Each of the questions or incomplete statements below is followed by five suggested answers or completions. Circle the one that is BEST in each case.

1. A 25-year-old woman is found to have asymmetric pupils, the left one being large, oval and poorly reactive to light and accommodation. She also has absent knee and ankle reflexes.

   Which of the following diagnoses would explain these findings?

   a. Argyll Robertson pupil

   b. Horner's syndrome

   c. Oculomotor (III) nerve paralysis in a diabetic person

   d. Adie's syndrome

   e. Tentorial herniation

2. A helpful finding in distinguishing amyotrophic lateral sclerosis from myelopathy associated with cervical disk disease is

   a. the presence of fasciculations in the forearms and hands bilaterally

   b. increased serum enzymes (aldolase and creatine phosphokinase)

   c. pseudobulbar palsy

   d. extensor plantar (Babinski) responses

   e. the absence of a spinal subarachnoid block on lumbar puncture

3. A nine-year-old boy in fourth grade has lagged behind his classmates in reading and writing. Previously an amiable and happy child, during his fourth year in school he has become irritable, seclusive and given to day-dreaming. On a few occasions recently his mother has found him in the bathroom, masturbating. He was born without complication after a normal full-term pregnancy. He walked and talked at the expected ages. He has had no unusual or serious illnesses.

   His general health and physical development are normal, and neurologic examination discloses no abnormalities. Hearing and vision are normal. He is right-handed, but not as strongly so as the average child, and he still tends to confuse the right and left sides of his body and his surroundings. He reads a simple passage very slowly and with great effort, and he fails to recognize some words entirely. He also makes mistakes in identifying single letters of the alphabet. Almost invariably he confuses letters of similar form, such as "b" and "d", and "N", "M", and "W". His printing and writing of simple words to dictation are slow and incorrect, with frequent misspelling, misformation and omission of letters, and reversals of the proper sequence of letters in words. His speech is normal, and he can add, subtract, divide and multiply with formal facility for his age. He can write numbers, and he identifies numbers correctly, except for a tendency to confuse the printed "6" and "9".

   Which of the following is the most likely diagnosis?

   a. Mental retardation

   b. Congenital agnosia and apraxia

   c. Developmental dyslexia

   d. Adjustment reaction of childhood with secondary learning retardation

   e. Maturational variation, probably within normal limits

NEUROLOGY (Part II)

Section A

Directions: For each of the questions or incomplete statements below, ONE or MORE of the answers or completions given is/are correct. Circle one or all of the answers which you feel is/are correct.

1. In herpes simplex encephalitis of adults, which of the following frequently occur(s)?

   a. Onset over a few days

   b. Seizures within the first few days

   c. Focal cerebral signs

   d. Fatal termination

2. Neurologic manifestations of dissecting aneurysm of the aorta include

   a. ischemic necrosis of peripheral nerves

   b. coma

   c. spinal cord ischemia

   d. cerebral infarction

HEMATOLOGY (Part I)

Section B

Directions: The incomplete statement below is followed by five suggested answers. Circle the one that is BEST.

1. A 52-year-old woman complains of progressive weakness and fatigue. Her spleen extends 14 cm below the left costal margin, and marked pallor of the skin is noted. There is mild scleral icterus.

Laboratory studies:

Hemoglobin	7 gm/100 ml	
Hematocrit	20 per cent	
Erythrocyte count	2,110,000/cu mm	
Leukocyte count	6700/cu mm	
	Differential count:	
	Neutrophils	60 per cent
	Metamyelocytes	5 per cent
	Myelocytes	3 per cent
	Promyelocytes	1 per cent
	Lymphocytes	25 per cent
	Monocytes	2 per cent
Peripheral blood smear	Many tear-drop poikilocytes	
	Reticulocytes	5 per cent
	Normoblasts	6/100 leukocytes
Platelet count	340,000/cu mm	
Serum bilirubin		
Total	2.2 mg/100 ml	
Direct (conjugated)	0.2 mg/100 ml	
Indirect (unconjugated)	2.0 mg/100 ml	

The most likely diagnosis is

a. erythroleukemia with hemolysis

b. agnogenic myeloid metaplasia with hemolysis

c. metastatic cancer with hemolysis

d. chronic granulocytic leukemia

e. none of the above

HEMATOLOGY (Part II) Section B

Directions: For each of the questions or incomplete statements below, ONE or MORE of the answers or completions given is correct. Circle one or all of the answers which you feel is/are correct.

1. A 60-year-old woman was seen by a physician because of fever, 40-lb weight loss, pallor, marked muscular weakness and recurrent infections.

   Laboratory studies:

Hemoglobin	8.0 gm/100 ml
Hematocrit	24 per cent
Leukocyte count	6800/cu mm; normal differential
Platelet count	280,000/cu mm
Reticulocytes	0.3 per cent

   Bone marrow showed almost a total absence of erythrocyte precursors.

   Which of the following diagnostic procedures is/are correct?

   a. Roentgenogram of the chest

   b. Measurement of plasma gamma globulin

   c. Edrophonium chloride (Tensilon) test

   d. Intravenous pyelogram

2. The spleen is the major site of erythrocyte destruction in which of the following disorders?

   a. Sickle cell disease in adults

   b. Paroxysmal nocturnal hemoglobinuria

   c. Pernicious anemia

   d. Hereditary spherocytosis

3. A 42-year-old woman has chronic granulocytic leukemia. Which of the following is/are likely to be found in this patient?

   a. Philadelphia (Ph^1) chromosome

   b. A low leukocyte alkaline phosphatase activity

   c. Splenomegaly

   d. Coombs-positive hemolytic anemia

4. Which of the following statements concerning chronic granulocytic leukemia is/are true?

   a. Splenomegaly is a consistent finding in patients with leukocyte counts greater than 150,000/cu mm

   b. A secondary hemolytic anemia usually spherocytic, occurs in about 25 per cent of patients

   c. Current therapy yields symptomatic relief, but does not significantly prolong life

   d. Chromosome analyses revert to normal in patients in therapeutic remission

RHEUMATOLOGY (Part I) Section B

Directions: Each of the questions or incomplete statements below is followed by five suggested answers or completions. Circle the one that is BEST in each case.

1. An 18-month-old girl is seen by a hematologist because of fever spiking to 40.6 C (105.0 F) each afternoon accompanied by a stiff neck and a salmon pink maculopapular rash over her trunk and extremities. Physical examination disclosed hepatosplenomegaly and lymphadenopathy. Leukocyte count was 42,000/cu mm with a "shift to the left." Bone marrow examination disclosed no increase in blast forms although the myeloid/erythroid ratio was 6/1.

   The most likely diagnosis is

   a. leukemia

   b. infectious mononucleosis

   c. Henoch-Schönlein purpura

   d. Juvenile rheumatoid arthritis

   e. acute rheumatic fever

2. A patient with systemic lupus erythematosus complicated by nephritis and hyperuricemia (12 mg/100 ml) is considered for both allopurinol (Zyloprim) and 6-mercaptopurine (Purinethol) therapy.

   Which of the following statements best summarizes the relationship of these two drugs?

   a. The two drugs should never be given concomitantly

   b. The drugs may be given together in the usual dosages, but complete blood counts should be obtained at least every two days

   c. The pharmacologic action of allopurinol is inhibited by concomitant administration of 6-mercaptopurine

   d. If the two drugs are to be given concomitantly, the dosage of 6-mercaptopurine should be reduced to about 20 per cent of the usual dosage

   e. The pharmacologic action of 6-mercaptopurine is inhibited by concomitant administration of allopurinal

3. A 36-year-old 360-lb man has been in a hospital for three weeks for treatment of obesity. After 10 days of total starvation, he awoke with an acutely painful right first metatarsophalangeal joint, fluid from which showed typical monosodium urate crystals.

   Which of the following would be an unexpected finding?

   a. Hyperuricemia

   b. An elevated serum beta-hydroxbutyric acid level

   c. Metabolic acidosis

   d. 24-Hour urinary uric acid greater than 600 mg

   e. Joint fluid with a leukocyte count greater than 20,000/cu mm

Directions: The incomplete statement below is followed by five suggested answers. Circle the one that is BEST.

4. A 12-year-old girl with congenital cyanotic heart disease due to transposition of the great vessels was admitted to the hospital because of joint pain and swelling. She had had painless swelling of both knees for five years. Three months before admission, the swelling had become worse and similar swelling had occurred in her ankles, elbows and wrists. At approximately monthly intervals, her knees became acutely painful for about 24 hr and she required narcotics for relief.

   Examination disclosed a markedly cyanotic, slender girl. Swelling of her knees, ankles, wrists and elbows was striking due to marked effusions and synovial thickening. Clubbing of fingers and toes, cardiomegaly and a harsh systolic murmur over the left sternal border were present. Peripheral blood flow, as measured by venous occlusion plethysmography, was increased bilaterally despite marked hyperviscosity of the blood secondary to polycythemia.

   Roentgenographic examination of all long bones disclosed no abnormalities except for periosteal new bone formation in the shaft of the third left metacarpal. Laboratory values include a hemoglobin of 23 gm/100 ml and a hermatocrit of 80 per cent.

   The most likely diagnosis is

   a. congenital syphilis

   b. gouty arthritis

   c. tuberculous arthritis

   d. hypertrophic osteoarthropathy

   e. rheumatoid arthritis

RHEUMATOLOGY (Part II)

Directions: For the question below, ONE or MORE of the answers given is/are correct. Circle one or all of the answers which you feel is/are correct.

1. After living in Arizona for two years, a 35-year-old Negro man developed several lesions indicative of erythema nodosum in the anterior tibial regions of his legs. Three months later, slightly painful swelling developed in his left knee, and one month after that, a similar swelling developed in his right knee. A roentgenogram of the chest revealed a thin-walled cyst in the right middle lobe. A PPD (second strength – 250 T.U.) skin test was negative.

   Positive results from which of the following would be helpful in establishing the diagnosis?

   a. Histoplasmin skin test

   b. Coccidioidin skin test

   c. Synovial fluid examination and culture

   d. Synovial tissue biopsy

INFECTIOUS DISEASE AND ALLERGY (Part I)

Section B

Directions: Each of the questions or incomplete statements below is followed by five suggested answers or completions. Circle the one that is BEST in each case.

1. A 67-year-old man, who was admitted to the hospital, has been obtunded and febrile for three days. Tremors of the hands, jaw and extended tongue are prominent. Nuchal rigidity is present. Cerebrospinal fluid obtained by a lumbar puncture contains 100 cells/cu mm with 60 per cent neutrophils, protein 40 mg/100 ml and glucose 60 mg/100 ml. The concomitant blood glucose is 105 mg/100 ml.

   Which of the following would be most appropriate at this point?

   a. Administration of penicillin, 15 million units/day, intravenously

   b. Observation for 48 hr

   c. Administration of isoniazid, 300 mg/day and streptomycin, 2 gm/day

   d. Administration of methicillin, 8 gm/day, intravenously

   e. Administration of ampicillin, 8 gm/day, intravenously

2. Transient pulmonary infiltrates, episodic wheezing, low-grade fever and expectoration of brown plugs are features most characteristic of

   a. allergic bronchopulmonary aspergillosis

   b. systemic sclerosis (scleroderma)

   c. Goodpasture's syndrome

   d. sequoiosis

   e. byssinosis

3. Amphotericin B therapy is indicated for each of the following systemic infections EXCEPT

   a. coccidioidomycosis

   b. histoplasmosis

   c. candidiasis

   d. nocardiosis

   e. cryptococcosis

4. Antibiotics are useful in the treatment of each of the following causes of malabsorption EXCEPT

   a. systemic sclerosis (scleroderma)

   b. jejunal diverticulum

   c. intestinal lipodystrophy (Whipple's disease)

   d. celiac-sprue disease (nontropical sprue)

   e. tropical sprue

INFECTIOUS DISEASE AND ALLERGY (Part II)

Section B

Directions: For the incomplete statement below, ONE or MORE of the answers or completions given is correct. Circle one or all of the answers which you feel is/are correct.

1. Staphylococcal enterocolitis

   a. usually occurs in hospitalized patients undergoing abdominal surgery who have received antimicrobial therapy

   b. is readily diagnosed by microscopic examination of a Gram stain of a stool specimen

   c. should be treated with an orally administered antistaphylococcal antibiotic such as vancomycin (Vancocin)

   d. is caused by preformed exotoxin

PULMONARY DISEASE (Part I) Section C

Directions: The incomplete statement below is followed by five suggested completions. Circle the one that is BEST.

1. The most effective means of lowering pulmonary artery pressure in a patient who has chronic obstructive lung disease with cor pulmonale is by administration of
   a. digoxin (Lanoxin)
   b. aminophylline
   c. oxygen
   d. a nebulized solution of isoproterenol (Isuprel)
   e. ethamivan (Emivan)

PULMONARY DISEASE (Part II)

Directions: For each of the questions or incomplete statements below, ONE or MORE of the answers or completions given is/are correct. Circle one or all of the answers which you feel is/are correct.

1. Which of the following statements concerning severe kyphoscoliosis is/are true?
   a. Kyphoscoliosis may result in hypoxemia and pulmonary hypertension
   b. Respiratory failure often results from lung infection
   c. Cor pulmonale may occur
   d. There is interstitial fibrosis of the lung parenchyma
2. Which of the following occur(s) in patients who have bronchial adenomas?
   a. Facial erythema and flushing
   b. Hemoptysis
   c. Lymph node metastases
   d. Recurrent pneumonia
3. Which of the following is/are associated with recurrent pneumonia?
   a. Hypogammaglobulinemia
   b. Bronchial adenoma
   c. Achalasia
   d. Goodpasture's syndrome

4. A 35-year-old businessman flew from Chicago to Aspen, Colorado. The following day he climbed a mountain, reaching an altitude in excess of 12,000 ft. During the descent he became dyspneic. The dyspnea continued after he reached his hotel room. There was no history of heart disease.

   A physical examination would be likely to disclose

   a. distended neck veins when the patient is in a sitting position
   b. an enlarged tender liver
   c. an enlarged heart with a gallop rhythm
   d. numerous medium moist rales

GASTROENTEROLOGY (Part I) Section C

Directions: The incomplete statement below is followed by five suggested completions. Circle the one that is BEST.

1. The use of exchange transfusions for patients with hepatic coma due to fulminant hepatic necrosis
   a. is clearly indicated for all such patients
   b. has been proven to be more effective than hemodialysis in prolonging life
   c. results in survival of 50 per cent of the patients
   d. requires further evaluation before its therapeutic value can be accepted

GASTROENTEROLOGY (Part II)

Directions: For each of the questions or incomplete statements below, ONE or MORE of the answers or completions given is/are correct. Circle one or all of the answers which you feel is/are correct.

1. The development of alkalosis in a patient with hepatic encephalopathy
   a. is common in deep coma
   b. is usually a respiratory alkalosis, presumably due to metabolic abnormalities affecting the respiratory center
   c. increases cerebral toxicity from plasma hyperammonemia
   d. can be treated with clinical benefit by using carbon dioxide inhalations or dilute hydrochloric acid given intravenously

2. A middle-age patient develops a large, straw-colored, clear, right pleural effusion that recurs rapidly after thoracocentesis. He has been known to have advanced cirrhosis of the liver, and has had ascites for the past three months.

   Which of the following statements is/are correct?
   a. The presence of a separate intrathoracic disease (i.e. cancer, tuberculosis) is probable
   b. The pleural effusion is derived from the ascitic fluid, as a result of tiny defects in the right diaphragm which permit the free movement of abdominal fluid into the thorax
   c. The pleural effusion is due to azygos vein hypertension
   d. Pleural effusions on the right side are more common (5 to 10 per cent) than on the left side in patients who have cirrhosis of the liver with marked ascites

3. The maximal betazole (Histalog) test for gastric hydrochloric acid secretion
   a. provides a reliable method for distinguishing between patients with duodenal ulcers and patients without ulcers
   b. shows little similarity between patients with duodenal ulcers and those with benign gastric ulcers
   c. is of great value in separating patients with the Zollinger-Ellison syndrome from patients with severe duodenal ulcers who do not have gastrin-producing tumors
   d. is far more reproducible in the same subject than is a basal, nonstimulated test

4. A 48-year-old woman was admitted to the hospital because she had jaundice for two months. For years she had consumed a liter of wine daily. Physician examination disclosed hepatosplenomegaly.

Laboratory studies:

Hemoglobin	8.3 gm/100 ml
Reticulocytes	4.3 per cent
Serum bilirubin:	
Total	9.6 mg/100 ml
Direct (conjugated)	2.5 mg/100 ml
Indirect (unconjugated)	7.1 mg/100 ml
Serum glutamic oxaloacetic transaminase (SGOT)	3 X upper limit of normal
Serum albumin	4.5 gm/100 ml
Serum cholesterol	275 mg/100 ml

A peripheral blood smear showed reduced platelets and many erythrocytes with conspicuous spur-like projections.

With respect to this clinical picture, which of the following statements is/are correct?

a. The patient's bone marrow showed bypoplasia of erythroid precursors
b. The patient's serum transformed normal erythrocytes into acanthoid cells during incubation
c. Acute infectious hepatitis is frequently complicated by similar hematologic findings
d. Cirrhosis of the liver due to alcohol is the most common cause of these findings

CARDIOVASCULAR DISEASE (Part I) Section C

Directions: Each of the questions or incomplete statements below is followed by five suggested answers or completions. Circle the one that is BEST in each case.

1. In a patient with acute purulent pericarditis caused by penicillin G-sensitive Staphylococcus aureus, the therapy of choice would be

   a. administration of penicillin G alone in large doses, parenterally

   b. administration of penicillin G plus streptomycin

   c. repeated needle aspirations with the instillation of penicillin G, plus parenteral penicillin G

   d. administration of oxacillin (Prostaphlin), orally, in large doses

   e. open surgical drainage of the pericardium, plus administration of penicillin G, parenterally

2. A 33-year-old woman with a history of rheumatic fever and chronic atrial fibrillation had, on auscultation at the apex, a rumbling diastolic murmur that began with an opening snap and extended to the next first heart sound, even during long cycle lengths.

   It could be predicted that a simultaneous recording of left atrial and left ventricular pressures would show

   a. presystolic distention of the left ventricle

   b. absence of an end diastolic gradient across the mitral valve

   c. a persistent end diastolic gradient across the mitral valve

   d. a left atrial systolic (V) wave with rapid descending limb (Y descent)

   e. marked elevation of the left ventricular end diastolic pressure

3. A 19-year-old secretary with a known heart murmur went to the dentist and had her teeth cleaned. Four weeks later she noticed painful finger tips when she typed. Shortly thereafter she complained of fatigue, and was found to be febrile and anemic.

   Which of the following congenital malformations is she LEAST likely to have?

   a. Aortic stenosis

   b. Pulmonary stenosis

   c. Ostium secundum atrial septal defect

   d. Coarctation of the aorta

   e. Ventricular septal defect

CARDIOVASCULAR DISEASE (Part II)

Section C

Directions: For each of the questions or incomplete statements below, ONE or MORE of the answers or completions given is/are correct. Circle one or all of the answers which you feel is/are correct.

1. In which of the following conditions may there be cyanosis without associated right ventricular hypertension?
   a. Persistent left superior vena cava draining into the left atrium
   b. Ebstein's anomaly of the tricuspid valve with patent foramen ovale
   c. Pulmonary arteriovenous fistula
   d. Tetralogy of Fallot

2. A 55-year-old man has a history of fainting after standing for short periods of time. When supine, his blood pressure is 130/80 mm Hg and his pulse rate is 80/min; when standing, his blood pressure is 75/50 mm Hg and his pulse rate is 82/min.

   He probably has
   a. adrenal insufficiency
   b. a history of anhidrosis
   c. large varicose veins
   d. an increased blood pressure response to phenylephrine (Neo-Synephrine)

B.4 PHYSICIAN ATTITUDE SURVEY

INSTRUCTIONS: Please indicate the degree to which you agree or disagree with the following statements.

Continuing Education

1. My involvement in the SBMS-U program has enhanced my education in the basic medical sciences.

Strongly Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

2. I have learned significant new aspects of basic science by my involvement in the SBMS-U program.

Strongly Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

3. I spend more time talking with my professional colleagues about basic science than before my involvement in the SBMS-U program.

Strongly Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

4. The basic science textbooks are of little use to me.

Strongly Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

5. I feel that I am enhancing my continuing education by my involvement in the SBMS-U program.

Strongly
Agree : ______ : ______ : ______ : ______ : ______ : ______ : Strongly Disagree

Comment:

6. I would do better to spend more time reading journals and taking special courses instead of trying to help beginning doctors.

Strongly
Agree : ______ : ______ : ______ : ______ : ______ : ______ : Strongly Disagree

Comment:

7. I find that I am learning more basic science by interacting with students than by reading alone.

Strongly
Agree : ______ : ______ : ______ : ______ : ______ : ______ : Strongly Agree

Comment:

8. The approach of the SBMS-U program in the clinical problem format provides an opportunity for me to apply new knowledge in the basic sciences to my practice.

Strongly
Agree : ______ : ______ : ______ : ______ : ______ : ______ : Strongly Agree

Comment:

9. I find my continuing education in the basic sciences, as a result of my involvement in the SBMS-U program, more directly relevant to the needs of my immediate practice than other continuing educational exercises in these basic sciences which I have employed.

Strongly
Agree : ______ : ______ : ______ : ______ : ______ : ______ : Strongly Agree

Comment:

Time

1. I spend too much time with students.

Strongly Agree :_____:_____:_____:_____:_____:_____: Strongly Disagree

Comment:

2. Estimate the amount of time per week you spend engaged in the following activities: (to closest hour)

    a. student contact _____
    b. colleague contact concerning SBMS-U program _____
    c. studying textbooks _____
    d. studying the curriculum _____
    e. studying professional journals _____

3. I can't afford to spend four hours per week with a student.

Strongly Agree :_____:_____:_____:_____:_____:_____: Strongly Disagree

Comment:

4. I feel that I am shortchanging the students due to the limited amount of time I can spend with them.

Strongly Agree :_____:_____:_____:_____:_____:_____: Strongly Disagree

Comment:

5. The flexibility in MDA/MDE time scheduling permitted by the SBMS-U program makes the experience more enjoyable.

Strongly Agree :_____:_____:_____:_____:_____:_____: Strongly Disagree

Comment:

Teaching/Program

1. My role as MDA/MDE should be more closely and completely defined by the curriculum.

Strongly Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

2. My role as MDA/MDE has been too defined and limited by the curriculum.

Strongly Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

3. I have been provided adequate tools to carry out my responsibilities as an MDA/MDE in the SBMS-U program.

Strongly Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

4. The SBMS-U students are being given less than the optimum level of education in the basic sciences.

Strongly Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

5. I feel at a distinct disadvantage in dealing with the Ph.D. basic science faculty.

Strongly Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

6. The SBMS-U program has limited potential in application elsewhere in other surroundings.

Strongly Strongly
Agree :______:______:______:______:______:______: Disagree

Comment:

7. I would prefer to have more students to deal with on a regular basis.

Strongly Strongly
Agree :______:______:______:______:______:______: Disagree

Comment:

8. I don't feel competent to judge the student's progress through the basic science curriculum.

Strongly Strongly
Agree :______:______:______:______:______:______: Disagree

Comment:

9. The curriculum design of the SBMS-U program is a good one.

Strongly Strongly
Agree :______:______:______:______:______:______: Disagree

Comment:

10. The advising/evaluating functions would better be handled by full-time rather than part-time physicians.

Strongly Strongly
Agree :______:______:______:______:______:______: Disagree

Comment:

11. Medical training is better left to full-time faculties.

Strongly Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

12. I should be paid by the University for my involvement in the SBMS-U program.

Strongly Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

13. The SBMS-U staff has been responsive to my needs as an advisor/evaluator in the program.

Strongly Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

14. Having my students us~~ing~~e community hospital facilities has proven disruptive, to hospital operations,

Strongly Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

Practice

1. My involvement with the SBMS-U program has interfered with my practice.

Strongly Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

2. The new knowledge in the basic sciences gained through my involvement with the SBMS-U program has had an impact on the improvement of my practice.

Strongly
Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

3. I have been shortchanging my practice by my involvement in the SBMS-U program.

Strongly
Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

4. My involvement in the SBMS-U program has had little impact on my practice.

Strongly
Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

Status/Personal

1. I feel much better and professionally responsible as a result of my involvement in teaching beginning doctors.

Strongly
Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

2. I would recommend that my colleagues not yet involved in the SBMS-U program get involved in the program.

Strongly
Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

3. The student contact is valuable to me.

Strongly
Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

4. I feel that I am a part of the faculty of the University of Illinois College of Medicine.

Strongly
Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

5. My involvement in the SBMS-U program has interfered with my family life.

Strongly
Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

6. My part in the SBMS-U program is important.

Strongly
Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

7. I play a significant role in the SBMS-U program.

Strongly
Agree :______:______:______:______:______:______: Strongly Disagree

Comment:

TG/gs

B.5 STUDENT BACKGROUND/BIOGRAPHICAL QUESTIONNAIRE

Name ______________________________

As you perhaps know, there are many unresolved issues in medical education today. As part of a larger study designed to examine some of these issues, we are interested in how you, as a medical student, feel about them.

This questionnaire is designed to find out what you think about various aspects of medical training and practice. The information which you provide will be helpful in clarifying problems of medical education.

We recognize that many of the questions deal with complex issues and that the alternatives do not always express the subtleties of your opinions. However, the purpose is to obtain an overall picture of the attitudes held by medical students.

There are three points which we would like you to bear in mind while filling out this questionnaire:

1) This is not a test; there are no right or wrong answers.
2) Your individual identity will not be revealed and your personal answers will be kept confidential.
3) Read each question carefully before answering.

Thank you for your cooperation in this study.

1. (a) At what age did you first think of becoming a doctor? (Check one)

_______ Before the age of 10
_______ Between 10 and 13 years of age
_______ At 14 or 15 years of age
_______ At 16 or 17 years of age
_______ Since the age of 18

(b) At what age did you definitely decide to study medicine? (Check one)

_______ Before the age of 14
_______ At 14 or 15 years of age
_______ At 16 or 17 years of age
_______ Between 18 and 20 years of age
_______ Since the age of 21

2. Which one of the following statements best describes the way you feel about a career in medicine? (Check one)

_______ It's the only career that could really satisfy me
_______ It's one of several careers which I could find almost equally satisfying
_______ It's not the most satisfying career I can think of, everything considered
_______ A career I decided on without considering whether I would find it the most satisfying

3. (a) How important was each of the following in your decision to enter the medical profession? (Answer for each)

	Very important	Fairly important	Of minor importance	Not at all important
(1) Mother	______	______	______	______
(2) Father	______	______	______	______
(3) Other relatives	______	______	______	______
(4) Friends who are not in medicine	______	______	______	______
(5) Physicians you know personally	______	______	______	______
(6) Physicians you have heard or read about	______	______	______	______
(7) Medical students you know	______	______	______	______
(8) Undergraduate teacher	______	______	______	______

3. (a) (continued)

	Very important	Fairly important	Of minor importance	Not at all important
(9) Books, movies or plays (Give titles: ____ ____ ____)	____	____	____	____
(10) Other (What? ____ ____ ____	____	____	____	____

(b) Which two of these were of most importance in your decision to become a doctor? (List the appropriate numbers)

____

____

4. At the present time, how do the the following members of your family feel about you becoming a doctor? (Answer for each)

	Strong encouragement	Slight encouragement	Expressed no opinion	Slight opposition	Strong opposition	Doesn't apply
Mother	____	____	____	____	____	____
Father	____	____	____	____	____	____
Wife or husband	____	____	____	____	____	____
Brother or sister	____	____	____	____	____	____
Other relatives	____	____	____	____	____	____

5. Once you made up your mind to become a doctor, did you ever have any doubts that this was the right decision for you? (Check one)

____ Yes, serious doubts

____ Yes, slight doubts

____ No, no doubts at all

6. All things considered, about how much do you know about what you can expect in medical school? (Check one)

_______ A great deal

_______ A fair amount

_______ Only a little

_______ Practically nothing

_______ Unsure

7. How important has each of the following been in helping you to form a picture of what medical school is like? (Answer for each)

	Very important	Fairly important	Of minor importance	Not at all important
Medical school bulletins	____	____	____	____
Medical students at the Urbana campus	____	____	____	____
Medical students at the Chicago campus	____	____	____	____
Medical students at other schools	____	____	____	____
Members of your family who are doctors	____	____	____	____
Your family physician	____	____	____	____
Other physicians who are friends	____	____	____	____
Medical school faculty	____	____	____	____
College faculty	____	____	____	____
Books, movies, plays (Give titles ____________ ____________________)	____	____	____	____
Other (What? ____________ ____________________ ____________________)	____	____	____	____

8. Compared to your undergraduate studies, how much time do you think your studies in your first year of medical school are going to take? (Check one)

_______ I think I am going to have to spend more time on my studies in medical school

_______ I think I can spend less time on them

_______ I think I'll have to spend about the same amount of time on them

_______ Don't know

9. In your opinion, how important is each of the following for a student to get the most out of the first year of medical school? (Answer for each)

	Very important						Not at all important
Manual dexterity (with instruments, tools, machines, etc.)	____	____	____	____	____	____	____
Ability to memorize	____	____	____	____	____	____	____
Ability to cope with theoretical material	____	____	____	____	____	____	____
Previous knowledge of physical science	____	____	____	____	____	____	____
Ability to put aside almost everything for your studies	____	____	____	____	____	____	____
Previous knowledge of social science	____	____	____	____	____	____	____
Getting along with other students	____	____	____	____	____	____	____
Ability to remain relaxed, rather than overly tense and nerv ous about your work	____	____	____	____	____	____	____
Learning as many medical facts as possible	____	____	____	____	____	____	____
Making up your own mind about what to emphasize in your studying	____	____	____	____	____	____	____
Getting along with the medical faculty	____	____	____	____	____	____	____
Ability to carry out research	____	____	____	____	____	____	____

10. What is your realistic appraisal of how well you will do in your first year compared with the other members of your class? (Check one)

_______ I expect to do considerably better than average

_______ I expect to do somewhat better than average

_______ I expect to be about average

_______ I expect to be below average

_______ Don't know

11. How difficult do you think each of the following will be for you in your first year of medical school? (Answer for each)

	Very difficult ... Not at all difficult
Making friends in your class	:____:____:____:____:____:____:____:
Keeping up with other students	:____:____:____:____:____:____:____:
Learning what is expected of you	:____:____:____:____:____:____:____:
Adjustment to the sights and smells of the anatomy lab	:____:____:____:____:____:____:____:
Learning to think for yourself	:____:____:____:____:____:____:____:
Getting to know faculty members	:____:____:____:____:____:____:____:
Not allowing yourself to become overly tense or nervous about your work	:____:____:____:____:____:____:____:

12. How much contact with each of the following groups do you think you will have during your first year in medical school? (Answer for each)

	More than enough contact ... Extremely little contact
Members of ~~other~~ Upper classes in medical school	:____:____:____:____:____:____:____:
Patients	:____:____:____:____:____:____:____:
Basic science faculty	:____:____:____:____:____:____:____:
~~Full-time clinical faculty~~	:____:____:____:____:____:____:____:
Practicing physicians	:____:____:____:____:____:____:____:
Administrators of the medical school	:____:____:____:____:____:____:____:
Medical specialists	:____:____:____:____:____:____:____:
Friends outside of school	:____:____:____:____:____:____:____:
Members of your family	:____:____:____:____:____:____:____:
Faculty heads of departments	:____:____:____:____:____:____:____:

13. How much do you feel you already know about faculty members at (your) medical school?

	A great deal ... Very little
	:____:____:____:____:____:____:____:

14. When do you expect that you will first come to think of yourself as a doctor? (Check one)

_______ I already think of myself as a doctor
_______ During my first year in medical school
_______ During my second year
_______ During my third year
_______ During my fourth year
_______ During my internship
_______ During my residency
_______ Haven't given it any thought

15. What things do you think you will like best about being a doctor? (Check as many as apply)

_______ Being able to deal directly with people
_______ Being able to help other people
_______ The fact that medicine is a highly respected profession
_______ Having interesting and intelligent people for colleagues
_______ Doing work involving scientific method and research
_______ Being my own boss
_______ Being sure of earning a good income
_______ The challenging and stimulating nature of the work
_______ Other (What? ______________________________)

16. (a) In your opinion, how well does each of the following phrases describe the medical profession? (Answer for each)

		Very good description	Fair description	Poor description
(1)	A profession which has high standing in the community	_____	_____	_____
(2)	A profession of service to the community	_____	_____	_____
(3)	A profession which is secure and lucrative	_____	_____	_____
(4)	A profession which helps individuals directly	_____	_____	_____
(5)	A profession in which real ability is recognized by one's colleagues	_____	_____	_____
(6)	A profession requiring harder work than others	_____	_____	_____

(b) In your opinion, which one of the above phrases best describes the medical profession? (List the appropriate number) __________

17. How do you feel about competing with other people, especially when the stakes are high? My feeling about competitive situations is that (Check one)

_______ I dislike them and prefer to avoid them completely

_______ I dislike them somewhat

_______ I have neutral feelings about them

_______ I enjoy them somewhat

_______ I get a kick out of them and sometimes seek them out

18. How much competitiveness do you expect among your classmates in medical school? (Check one)

_______ A great deal of competitiveness

_______ A fair amount of competitiveness

_______ Only a little competitiveness

_______ No competitiveness at all

19. (a) Below is a list of problems and situations which many medical students meet in their dealings with patients. How confident do you expect to feel about your ability to deal with each of these problems at the present time? (Answer for each)

Completely confident — Completely lacking in confidence

(1) When a patient has an emotional outburst of some kind :____:____:____:____:____:____:____:

(2) Preventing a patient from becoming embarrassed during a pelvic examination :____:____:____:____:____:____:____:

(3) Having to do a painful procedure on a sick child :____:____:____:____:____:____:____:

(4) Having to tell a patient that the tests performed on him do not reveal the cause of his problems :____:____:____:____:____:____:____:

(5) Deciding what to tell a patient who has a serious and irremediable illness :____:____:____:____:____:____:____:

(6) Knowing what to do in an emergency :____:____:____:____:____:____:____:

(7) Being able to do a venipuncture without any difficulty :____:____:____:____:____:____:____:

(8) Having a doctor as one of your patients :____:____:____:____:____:____:____:

(9) Being able to make a diagnosis in a difficult case :____:____:____:____:____:____:____:

	Completely confident	Completely lacking in confidence
(10) Deciding on appropriate medication and dosage	:____:____:____:____:____:____:____:	
(11) Handling a patient who refuses to accept what you tell him	:____:____:____:____:____:____:____:	

(b) About which of these problems do you expect to feel more confident once you have become an experienced practitioner? (Indicate the appropriate numbers from the list above ____________________)

20. (a) In your opinion, how important is each of the following characteristics in making a good physician? (Answer for each)

		Very important	Fairly important	Of minor importance	Not at all important
(1)	Good appearance	____	____	____	____
(2)	Warm and pleasing personality	____	____	____	____
(3)	Dedication to medicine	____	____	____	____
(4)	High intelligence	____	____	____	____
(5)	Skillful management of time	____	____	____	____
(6)	Scientific curiousity	____	____	____	____
(7)	Integrity	____	____	____	____
(8)	Ability to think in an organized way	____	____	____	____
(9)	Research ability	____	____	____	____
(10)	Ability to get along with people	____	____	____	____
(11)	Recognition of own limitations	____	____	____	____
(12)	Getting real enjoyment out of medicine	____	____	____	____

(b) In your opinion, which two of these characteristics are most important in making a good physician? (List the appropriate numbers.)

____

____

(c) In your opinion, which two of these are more important to medicine than to other professions? (List the appropriate numbers.)

____

____

21. How important is each of the following types of social behavior to the success of a physician? (Answer for each)

	Very important	Fairly important	Not at al importan
To maintain a restrained and dignified manner	_____	_____	_____
To wear conservative clothing	_____	_____	_____
To participate in community activities	_____	_____	_____
To be a good conversationalist	_____	_____	_____
To have a degree from a top medical school	_____	_____	_____
To maintain an air of confidence (even when he is not feeling confident)	_____	_____	_____

22. In which one of the following categories would you say the average yearly income of the specialist and of the general practitioner fall? (Check one in each group)

SPECIALIST	GENERAL PRACTITIONER
_____ Under $10,000	_____ Under $10,000
_____ $10,000-$20,000	_____ $10,000-$20,000
_____ $20,000-$30,000	_____ $20,000-$30,000
_____ $30,000-$40,000	_____ $30,000-$40,000
_____ $40,000-$50,000	_____ $40,000-$50,000
_____ $50,000-$75,000	_____ $50,000-$75,000
_____ Over $75,000	_____ Over $75,000

23. How much have you thought about the kind of medical career you would like to have? (Check one)

_____ A great deal
_____ A fair amount
_____ Only a little
_____ Not at all

24. When you have finished your formal medical training (including work beyond your M.D.):

(a) To what type of professional activity in the list below would you prefer to give most of your working time? Please indicate your first two choices in the order of your preference. (Check one in each group)

FIRST CHOICE

______ General practice

______ Specialty practice (Which specialty? ____________________)

______ Teaching some medical specialty (Which specialty? __________)

______ Doing research

______ Other (What? ______________________________________)

SECOND CHOICE

______ General practice

______ Specialty practice (Which specialty? ____________________)

______ Teaching some medical specialty (Which specialty? __________)

______ Doing research

______ Other (What? ______________________________________)

(b) Apart from what you would like, to what type of professional activity in the list below do you expect to give most of your working time? (Check one)

______ General practice

______ Specialty practice

______ Teaching some medical specialty

______ Doing research

______ Other (What? ____________________________)

(c) How certain are you about your choice of professional activity in Question (b) above? (Check one)

______ Very certain

______ Fairly certain

______ Not at all certain

25. If you could arrange it, in which one of the following situations would you plan to carry out the professional activity you said you prefer most? (Check one)

______ Own professional office with hospital affiliation

______ Own professional office without hospital affiliation

______ Large private clinic or hospital

______ Small group clinic

______ Medical school

______ Other (What? ____________________________)

26. What yearly income do you think you might realistically expect

(a) Ten years after medical school? (Check one)

_____ Under $10,000
_____ $10,000-$20,000
_____ $20,000-$30,000
_____ $30,000-$40,000
_____ $40,000-$50,000
_____ $50,000-$75,000
_____ Over $75,000

(b) At the peak of your career? (Check one)

_____ Under $10,000
_____ $10,000-$20,000
_____ $20,000-$30,000
_____ $30,000-$40,000
_____ $40,000-$50,000
_____ $50,000-$75,000
_____ Over $75,000

27. (a) What two things or activities in the list below do you expect will give you the most satisfaction? (Check one in each column under "a")

	(a)		(b)	
	Most satisfying to YOU	Next most satisfying to YOU	Most satisfying to DOCTORS	Next most satisfying to DOCTORS
Working toward national or international betterment	_____	_____	_____	_____
Leisure time activities	_____	_____	_____	_____
Professional career	_____	_____	_____	_____
Participating in community activities	_____	_____	_____	_____
Family relationships	_____	_____	_____	_____
Religious beliefs or activities	_____	_____	_____	_____

(b) In your opinion what two things or activities in the list below give doctors in practice the most satisfaction? (Check one in each column under "b")

28. Below are some considerations that might enter into your selection of a specialty or of general practice in medicine. Which two are most important to you as you think about your career? Which two are least important? (Check two in each column)

	Most important	Least important
Having the opportunity to know your patients well	____	____
Being able to establish your own hours of work	____	____
Meeting diagnostic problems that are particularly challenging	____	____
Having enjoyable relationships with colleagues	____	____
Making a good income	____	____
Having patients who will appreciate your efforts	____	____
Having prestige within the medical profession	____	____

29. (a) How difficult is it for you to finance your medical education? (Check one)

Extremely difficult — Not at all difficult

:____:____:____:____:____:____:____:

(b) Indicate below the relative proportion of support for expenses while in medical school.

____% 1) scholarship

____% 2) loan(s)

____% 3) personal savings

____% 4) employment during school year

____% 5) employment during vacations

____% 6) spouse employment

____% 7) parents

____% 8) other (specify) ____________________

Total = 100%

30. How often (number of hours per week) do you expect to engage in the following activities while in medical school?

_____ Going to the movies

_____ Reading serious books and magazines

_____ Listening to music

_____ Studying

_____ Attending sports events as a spectator

_____ Participating in sports events

_____ Going out on dates

_____ Attending classes

_____ Participating in organized campus activities

_____ Talking with friends

_____ Seeing patients

_____ Working at special hobbies (What? ______________________)

_____ Other (What? ________________________________)

31. What is your father's occupation?

____

32. Do you have any relatives who are in any of the following professions? (If yes, what is their relationship to you?)

	No	Yes	Parent	Other close relative	Other relative
M.D.'s	_____	_____	_____	_____	_____
Lawyers	_____	_____	_____	_____	_____
Dentists	_____	_____	_____	_____	_____
Clergymen	_____	_____	_____	_____	_____
Teachers	_____	_____	_____	_____	_____
Nurses	_____	_____	_____	_____	_____
Engineers	_____	_____	_____	_____	_____
Other professionals? (What?__________)	_____	_____	_____	_____	_____

33. During your first year of medical school, how likely do you feel it is that you will come in contact with the following types of information?

	likely						unlikely
a. general information about the medical profession	1	2	3	4	5	6	7
b. Information about clinical applications of basic medical sciences	1	2	3	4	5	6	7
c. information about basic medical science theory per se	1	2	3	4	5	6	7

39. From your point of view, how desirable is it that you come in contact with each of these types of information?

	desirable						undesirable
a. general information about the medical profession	1	2	3	4	5	6	7
b. information about clinical applications of basic medical sciences	1	2	3	4	5	6	7
c. information about basic medical sciencer theory per se	1	2	3	4	5	6	7

B.6 STUDENT ROLE EXPECTATIONS QUESTIONNAIRE

As a Begininng Doctor, there are several activities in which you may engage. The last time we were together, we asked you to sort several of these activities into categories which represented the amount of time and energy you felt you might allocate for each.

Today we are interested in two things. First, we would like your best estimate concerning the likelihood that you will engage in each of the activities presented and second, assuming that you do engage in the activity, we would like you to indicate how desirable that activity would be.

It is our belief that the likelihood and desirability estimates will help us to better understand what is encountered by the individual in his role of Beginning Doctor.

As usual, we hope that this information, presented in group summary form, will provide feedback about the medical education process.

Thank you for your cooperation.

Consider your role as a Beginning Doctor. For each of the activities listed below, please indicate the probability of its occurrence during the school year.

←―――――――――― ――――――――――→

I will: very likely :___:___:___:___:___:___:___: very unlikely

1. Attend classes. :___:___:___:___:___:___:___:
2. Talk about non-medical matters with other Beginning Doctors. :___:___:___:___:___:___:___:
3. Help my fellow B.D.s with academic problems they encounter. :___:___:___:___:___:___:___:
4. Listen to the complaints of my fellow B.D.s. :___:___:___:___:___:___:___:
5. Read texts and journals which are not part of any formal assignment. :___:___:___:___:___:___:___:
6. Attend meetings, seminars, and colloguia for B.D.s. :___:___:___:___:___:___:___:
7. Ask nurses and technicians questions about medical practices. :___:___:___:___:___:___:___:
8. Study to pass national boards. :___:___:___:___:___:___:___:
9. Manage the social relationships between doctor and patients. :___:___:___:___:___:___:___:
10. Cram for exams. :___:___:___:___:___:___:___:
11. Do Physical exams. :___:___:___:___:___:___:___:
12. Take histories. :___:___:___:___:___:___:___:
13. Diagnose patients' medical problems. :___:___:___:___:___:___:___:
14. Ask other B.D.s questions about academic and clinical problems. :___:___:___:___:___:___:___:
15. Seek out faculty for individualized help in the basic medical sciences. :___:___:___:___:___:___:___:

⟵——————⟶

I will: very likely :___:___:___:___:___:___:___: very unlikely

16. Study those basic medical sciences in which I develop special interest. :___:___:___:___:___:___:___:

17. Study those areas of a basic science in which I develop a special interest. :___:___:___:___:___:___:___:

As you have indicated, some of the activities are more likely to occur than others. Assuming that you do engage in each, please indicate how desirable-undesirable each would be.

It is: highly desirable ←—————— ——————→ highly undesirable
:___:___:___:___:___:___:___:

1. Attend classes. :___:___:___:___:___:___:___:
2. Talk about non-medical matters with other Beginning Doctors. :___:___:___:___:___:___:___:
3. Help my fellow B.D.s with academic problems they encounter. :___:___:___:___:___:___:___:
4. Listen to the complaints of my fellow B.D.s. :___:___:___:___:___:___:___:
5. Read texts and journals which are not part of any formal assignment. :___:___:___:___:___:___:___:
6. Attend meetings, seminars, and colloquia for B.D.s. :___:___:___:___:___:___:___:
7. Ask nurses and technicians questions about medical practices. :___:___:___:___:___:___:___:
8. Study to pass national boards. :___:___:___:___:___:___:___:
9. Manage the social relationships between doctor and patient. :___:___:___:___:___:___:___:
10. Cram for exams. :___:___:___:___:___:___:___:
11. Do physical exams. :___:___:___:___:___:___:___:
12. Take histories. :___:___:___:___:___:___:___:
13. Diagnose patients' medical problems. :___:___:___:___:___:___:___:
14. Ask other B.D.s questions about academic and clinical problems. :___:___:___:___:___:___:___:
15. Seek out faculty for individualized help in the basic medical sciences. :___:___:___:___:___:___:___:

I will: highly desirable ⟵ ⟶ :___:___:___:___:___:___:___: highly undesirable

16. Study those basic medical sciences in which I develop special interest. :___:___:___:___:___:___:___:

17. Study those areas of a basic science in which I develop a special interest. :___:___:___:___:___:___:___:

You have already given us estimates on the likelihood and desirability of certain activities associated with your position as a Beginning Doctor.

On the following pages, there are 18 items (activities) which may occur in your interactions with your advisor. Again, we would like you to indicate the likelihood of each activity occurring and, if it does occur, the desirability-undesirability of the activity.

As always, there are no right or wrong answers. They are to help us understand what the role of Beginning Doctor involves.

Thank you.

Consider your advisor. For each of the items listed below, please indicate the probability of its occurrence during the school year.

My advisor will: very unlikely ←——→ :___:___:___:___:___:___:___: very likely

1. Give advice on personal matters. :___:___:___:___:___:___:___:
2. Provide encouragement. :___:___:___:___:___:___:___:
3. Oversee my study habits. :___:___:___:___:___:___:___:
4. Be a friend. :___:___:___:___:___:___:___:
5. Demonstrate the relevance of basic medical science. :___:___:___:___:___:___:___:
6. Permit me to work closely with him on patients. :___:___:___:___:___:___:___:
7. Influence my approach toward treatment of patients. :___:___:___:___:___:___:___:
8. Instill standards of medical practice. :___:___:___:___:___:___:___:
9. Be willing to spend a great deal of time with me. :___:___:___:___:___:___:___:
10. Permit me to observe him in his practice. :___:___:___:___:___:___:___:
11. Understand what I as a Beginning Doctor need to know. :___:___:___:___:___:___:___:
12. Be aware of the latest developments in medical technology. :___:___:___:___:___:___:___:
13. Meet me on a social basis. :___:___:___:___:___:___:___:
14. Permit me to work with patients without his direct supervision. :___:___:___:___:___:___:___:

My advisor will: very unlikely ←——— ———→ :___:___:___:___:___:___:___: very likely

15. Provide information on what knowledge in basic medical science is required to function effectively as a physician. :___:___:___:___:___:___:___:

16. Be receptive to new ideas about medical practice. :___:___:___:___:___:___:___:

17. Invite me to his home. :___:___:___:___:___:___:___:

18. Permit me to define my own program. :___:___:___:___:___:___:___:

As you have indicated, some of the activities seem to you to be more likely to occur than others. We are also interested in how desirable you regard each of the activities to be for your training in the field of medicine.

It is desirable that my advisor: very undesirable ←——— ———→ :___:___:___:___:___:___:___: very desirable

1. Give advice on personal matters. :___:___:___:___:___:___:___:
2. Provide encouragement. :___:___:___:___:___:___:___:
3. Oversee my study habits. :___:___:___:___:___:___:___:
4. Be a friend. :___:___:___:___:___:___:___:
5. Demonstrate the relevance of basic medical science. :___:___:___:___:___:___:___:
6. Permit me to work closely with him on patients. :___:___:___:___:___:___:___:
7. Influence my approach toward treatment of patients. :___:___:___:___:___:___:___:
8. Instill standards of medical practice. :___:___:___:___:___:___:___:
9. Be willing to spend a great deal of time with me. :___:___:___:___:___:___:___:
10. Permit me to observe him in his practice. :___:___:___:___:___:___:___:
11. Understand what I as a Beginning Doctor need to know. :___:___:___:___:___:___:___:
12. Be aware of the latest developments in medical technology. :___:___:___:___:___:___:___:
13. Meet me on a social basis :___:___:___:___:___:___:___:

It is desirable that my advisor: very undesirable ←——— ———→ :___:___:___:___:___:___:___: very desirable

14. Permit me to work with patients without his direct supervision. :___:___:___:___:___:___:___:

15. Provide information on what knowledge in basic medical science is required to function effectively as a physician. :___:___:___:___:___:___:___:

16. Be receptive to new ideas about medical practice. :___:___:___:___:___:___:___:

17. Invite me to his home. :___:___:___:___:___:___:___:

18. Permit me to define my own program. :___:___:___:___:___:___:___:

B. 7 STUDENT ATTITUDE SURVEY

BEGINNING DOCTOR QUESTIONNAIRE 1971-72
School of Basic Medical Sciences, Urbana-Champaign

INSTRUCTIONS: Please respond to each statement by circling the appropriate letters. (SA-Strongly Agree; A-Agree; D-Disagree; SD-Strongly Disagree; NA-Not Applicable) Your comments in each area are solicited and will be very helpful for future planning. Do not put your name on the evaluation.

1. The intensive review sessions were good preparation for the Freshman Comprehensive and the National Board Exam Part I — SA A D SD NA
2. I used the SBMS-UC curriculum extensively as a study guide — SA A D SD
3. I wish my M.D. Advisor had known more about basic science — SA A D SD
4. On the whole, I did not like the SBMS-UC experience — SA A D SD
5. The clinical seminars at the outlying hospitals should be continued in their present format — SA A D SD
6. I always felt I could talk openly with the Dean — SA A D SD
7. How I did on the National Board Exam Part I is not very important to me — SA A D SD
8. I always felt I could talk openly with Bill Sorlie — SA A D SD
9. Evaluation of B.D. progress should be made strictly on the basis of written examination throughout the year — SA A D SD
10. The pre- and post-tests in the curriculum helped me decide what to study — SA A D SD
11. We should have had more basic science lectures — SA A D SD
12. Textbooks are the best study resource of the basic medical sciences — SA A D SD
13. The topical seminars in microbiology were useful — SA A D SD
14. The bi-weekly discussion sessions with the Dean and his staff should be continued — SA A D SD
15. My M.D. Advisor was happy with me as his advisee — SA A D SD
16. All students should study the same clinical problem at the same time throughout the year — SA A D SD
17. There was not enough space in the School building for individualized study — SA A D SD
18. SBMS-UC students were cheated on vacation time — SA A D SD

Comments: (1-18)

19. Throughout the year I felt that I was learning the elements of basic science needed for medicine SA A D SD

20. The Clinical Problem method of studying basic medical sciences has given me a more meaningful understanding of these sciences SA A D SD

21. The program was 3/4 faith and 1/4 reality SA A D SD

22. We should have had more labs in all of the sciences SA A D SD

23. The books and monographs in the SBMS-UC library were inadequate in quality SA A D SD

24. My M.D. Evaluator was unfair in his evaluation of me SA A D SD

25. The community medicine course in the School of Social Work was useful SA A D SD

26. Supervised and required dissection of the human cadaver should be part of the SBMS-UC program SA A D SD

27. I learned a great deal of anatomy from Janet Harris SA A D SD

28. My M.D. Evaluator tried to cover too much material SA A D SD

29. The only value of the clinical seminars was the free meal SA A D SD

30. I feel that my financial needs were adequately met given the limited funds available SA A D SD NA

31. The sex education program presented by Dr. Sorg was a valuable experience SA A D SD

32. I didn't learn enough basic science in the SBMS-UC program SA A D SD

33. In retrospect, the students should have formed a class organization SA A D SD

34. I never really got to know my fellow B.D.'s SA A D SD

35. There were too many seminars in microbiology SA A D SD

36. My M.D. Advisor only served to confuse me about elements of basic science SA A D SD

37. My clinical experiences served to stimulate my interest in medicine SA A D SD

38. My M.D. Advisor was a very helpful person SA A D SD

39. M.D. Evaluators should be discontinued in favor of letting the M.D. Advisor carry out this function SA A D SD

Comments: (19-39)

40. The clinical seminars were interesting, but of little value in learning elements of basic science SA A D SD

41. I always felt I could talk openly with Tom Gamble SA A D SD

42. I thought the comprehensive exam covered much of the basic science curriculum SA A D SD

43. My M.D. Advisor made too many demands on my time SA A D SD

44. The whole year was a confusing experience and I have no idea what I should have learned or did learn SA A D SD

45. The topical seminars in microbiology should be continued SA A D SD

46. All basic science seminars should be dropped in favor of complete independent study SA A D SD

47. I found the bi-weekly discussion sessions with the Dean and staff very useful SA A D SD

48. My M.D. Advisor never had enough time to work with me SA A D SD

49. At the conclusion of the year, I felt comfortable dealing with patients in the hospital setting SA A D SD

50. I had great difficulty arranging meetings with the campus faculty SA A D SD

51. I learned a great deal of pathology this year SA A D SD

52. The self-instructional immunology curriculum was a useful and effective learning resource SA A D SD

53. I feel that my M.D. Evaluator thought I was sort of stupid SA A D SD

54. The curriculum book was of no use SA A D SD

55. The Freshman Comprehensive Exam was too long SA A D SD

56. The sessions on embryology were valuable experiences for me SA A D SD

57. I thought the biochemistry seminars were valuable SA A D SD

Comments: (40-57)

58. Please rate the following faculty and staff. (6=Excellent, 1=Poor)

Name	Area/ Discipline	Knowledge of Area or Discipline	General Helpfulness
Bloomfield	Dean		
Anderson	Assoc. Dean		
Gamble	Asst. to Dean		
Sorlie	Curr. Devel.		
Rhode	Exec. Secy.		
Swift	Secretary		
Williams	Library Tech.		
Stolpe	Anatomy		
Harris	Anatomy		
Watterson	Embryology		
Tabin	Behavioral Sci.		
Gumport	Biochemistry		
Daniel	Genetics		
Gallagher	Immunology		
Gabridge	Microbiology		
Barker	Neuroscience		
Williams	Pathology		
Kokotovic	Pharmacology		
Barr	Physiology		
Sleator	Physiology		
Katzenellenbogen	Physiology		
Petitucci	Computer System		
Sorg	Sex Education		

59. Please estimate the percentage of basic medical science learning derived from each of the following sources: (the total should add to 100%)

textbooks ____%
slide-tape presentations ____%
seminars ____%
movies ____%
video tapes ____%
laboratory dissections ____%
contact with MDA's ____%
contact with MDE's ____%
contact with campus faculty ____%
other ____________ ____%
____________ ____
____________ ____%

Total 100%

60. When studying in a School carrel, I prefer the 48-inch carrel over the 36-inch carrel SA A D SD

61. Anatomy is a dull subject SA A D SD

Comments: (58-61)

62. BD's should be given much more formal instruction in patient contact before actually seeing patients SA A D SD

63. The anatomy sessions were very valuable SA A D SD

64. Please rate the following discipline seminars:
(1=very useful, 6= of little value)

Discipline	Faculty	Content	Presentation
Anatomy	Stolpe	___	___
	Harris	___	___
Embryology	Watterson	___	___
Behavioral Science	Tabin	___	___
Biochemistry	Gumport	___	___
	Clark	___	___
Genetics	Daniel	___	___
Immunology	Gallagher	___	___
Microbiology	Gabridge	___	___
Pathology	Williams	___	___
Physiology	Barr	___	___
	Sleator	___	___
	Katzenellenbogen	___	___
Neuroscience	Barker	___	___
Computer Systems	Petitucci	___	___

65. I could not study at the School, SA A D SD
Reasons:

66. The Level III exams after each clinical problem helped to learn pertinent elements of the curriculum SA A D SD

67. How long should standard basic science seminars last?
Other____ 1 hr 1½ hr 2 hr 2½ hr

Comments: (62-67)

68. The sex education program was too long SA A D SD

69. Little attention was paid to the students and their needs in the SBMS-UC program SA A D SD

70. There should have been more planned social events and student activities SA A D SD

71. I feel I have been cheated academically by the SBMS-UC experience SA A D SD

72. I made little or no use of my previous basic science education in the SBMS-UC program SA A D SD

73. The Dean kept raising false hopes in me throughout the year SA A D SD

74. The physiology seminars were a waste of time SA A D SD

75. I would have preferred not having as much clinical contact in the first year of medical school SA A D SD

76. I never knew to whom to go to settle a question SA A D SD

77. The SBMS-UC program is aimed at presenting the elements of basic science that I need as a physician rather than toward just passing exams SA A D SD

78. The bi-weekly pathology seminars were ineffectual and should be dropped. SA A D SD

79. The basic science seminars should be more directive and prescriptive rather than open question-answer sessions SA A D SD

80. The books and monographs in the SBMS-UC Library were adequate in quantity SA A D SD

Comments: (68-80)

81. I did most of my studying at the School between:

7 a.m. and 12 noon_____
12 noon and 5 p.m._____
5 p.m. and midnight_____
midnight and 7 a.m._____

82. Each student should have an assigned study carrel SA A D SD

83. The clinical seminars should be dropped SA A D SD

84. I never felt my views were taken into consideration in developing the SBMS-UC program SA A D SD

85. If I had it to do over again, I would prefer a more traditional educational program in the basic medical sciences SA A D SD

86. The monthly happy hours at the Dean's home were fun SA A D SD

87. The physiology seminars were of great value to me in preparing for the Comprehensive Exam SA A D SD

88. I used software materials quite a bit in studying the basic science and clinical materials SA A D SD

89. I wish we had had more contact with the basic science faculty SA A D SD

90. The behavioral science sessions were very instructive SA A D SD

91. The computer systems seminars were useful SA A D SD NA

92. The idea of separating the advising functions (MDA) from the evaluating functions (MDE) is a good one SA A D SD

Comments: (81-92)

93. The genetics seminars and demonstration labs were a valuable experience SA A D SD NA

94. The National Board Exam Part I covered much of the SBMS-UC basic science curriculum SA A D SD

95. The clinical aspects of the SBMS-UC program helped motivate me to study the basic sciences SA A D SD

96. A seminar group presentation of patient cases by their physicians would have been as effective as the individual patient contacts SA A D SD

97. How many hours per week did you spend with your M.D.A.?

0-1 1-2 2-3 3-4 4-5 over 5

Comments: (93-97)

APPENDIX C

INTERVIEW SCHEDULES

C.1 MEDICAL ADVISOR/EVALUATOR SCHEDULE

Interview Schedule - MDA/MDE

A. Pre Experience Considerations - Expectations

1. Where, when, and how did you first year about the program?
2. How much information did you have when you agreed to participate?
3. What were your reasons for agreeing to participate?
4. What were your expectations concerning the following when you agreed to participate?
    - (a) Your role
    - (b) The BD's role
    - (c) Time spent by you in the program.
5. Has anything happened so far not originally anticipated? What?

B. Rewards

6. (a) What aspects of the program do you find most positive (negative)?

    (b) What are the rewards for a physician as a result of being in the program?

C.

7. (a) Compare the basic science (+ clinical application) that students are getting here to what you received.

    (b) Will their training be sufficient (for passing June comprehensives)?

D. Roles

8. (a) Estimate amount of time you spend per week with BD.

    (b) Is this time adequate given (1) other time demands, (2) needs of the student?

    (c) How do you view your relationship with BD?

    - (1) Master-apprentice
    - (2) As colleague
    - (3) Some combination of above?

    (d) Amount of contact with other physicians in the community about medical school.

    Nature of contact

(e) Feedback from 1) students about program.
2) physicians
3) patients

(f) What is your part in BD's education?

(1) Counselor
(2) Teacher
(3) Supervisor
(4) Fellow Learner?

(g) How would you characterize the nature of your relationship, in a qualitative way, with your BD?

E.

9. (a) Do you feel there are any conflicts between their functions as MDA (MDE) and the roles of (1) faculty, (2) administration?

(b) What is relationship between MDA and MDE?

F.

10. (a) Do you plan to continue in the program? Why? How long?

(b) Will enough other physicians readily participate to allow the program to expand as planned?

C.2 CAMPUS FACULTY SCHEDULE

(1) We're interested in the nature of your relationship to the Medical School.

Remunerative? Yes ________ No ___________

What % of salary is paid by Medical School? _________

(a) What amount of contact, both formal and non-formal, do you have with: (Probe for nature and outcomes of contact)

1. Students:

Formal-

Non-formal-

2. Physician participants: (i.e. MDA's, MDE's)

Formal-

Non-formal-

3. Other faculty:

Formal-

Non-formal-

(b) What new behaviors are now required of you as a consequence of your:

1. Medical School affiliation?

2. Hierarchy?

(2) What are your feelings about the Medical School curriculum?

(a) Positive ?

(b) Negative?

(3) What are your feelings about the Medical School seminars?

(a) Positive?

(b) Negative?

(4) With reference to student performance:

(a) Are students learning enough basic sciences to enable them to perform competently as physicians?

Yes ________ No _________

On what basis?

(b) Are students learning enough basic sciences to pass Chicago Comps.?

Yes ________ No __________

If no, why?

(c) Are the students learning enough basic sciences to pass National Boards?

Yes _________ No ____________

(d) Are students in this program likely to learn as much basic science as with traditional mode?

Yes _________ No ____________

(5) Perhaps you could share your general observations on the program.

(a) Source of satisfaction or dissatisfaction?

(b) Predictions, especially of growth

C.3a STUDENT INTERVIEW SCHEDULE (FORM A)

Beginning Doctor
Interview Schedule

The following questions should not be adhered to in exact order, wording, etc. but rather serve as a frame of reference throughout your discussion with students. Before terminating the interview, quickly check to see if you have, at some point, obtained information relevant to each questions. These questions are in addition to material covered in the first interview.

I.

1. During the last week, approximately how many hours were you in contact with:

   a) your MDA

   b) your evaluator

   c) faculty

   d) other BDs

2. Are the hours indicated in each of the above fairly representative of the amount of time you spent each week over the last month?

   YES __________ NO ___________

   If not, how much time do you usually spend?

3. For each of the below, of the time you spend, how many hours were spent in primarily social behaviors?

   a) MDA

   b) evaluator

   c) faculty

   d) other BDs

In the past week, to what extent have you been:

4) Observing your MDA interact with patients?

5) Actively involved with patients; ie. taking histories, aiding in physicals?

6) Questioning your: a) MDA, b) evaluator, c) faculty, d) other BDs about medical science?

7) Answering MDA's questions about the content you have been studying?

8) Discussing with your MDA how his patients relate to basic science material? (Also discussing this with evaluator, faculty, BDs, and other MDAs.)

9) Involved with MDs other than or in addition to your MDA; ie, setting in on staff meetings, other MD's surgery, etc.

10) Informally discussing becoming an MD and medical culture in general with:

a) MDA	c) faculty
b) evaluator	d) other Bds

11) Discussing patients and patient care without specific reference to any basic science issues with:

a) MDA	c) faculty
b) evaluator	d) BDs

12) Discussing the issues and problems involved in patient rapport with:

a) MDA	c) faculty
b) evaluator	d) other BDs

13) Socializing (visiting home, attending sports events, etc) with:

a) MDA	c) faculty
b) evaluator	d) other BDs

14) Discussing those things in the basic sciences which you really need to know to practice medicine, with:

a) MDA	c) faculty
b) evaluator	d) BDs

II.

1. After obtaining the above, attempt to probe the issue of who initiated the interactions.

2. Attempt to quantify the time spent in the behaviors and the extent to which they would like to engage in the interactions.

III.

1. In the last two or three weeks, what specific incidents led to feelings of dissatisfaction? Describe these.

2. In the last two or three weeks, what specific incidents led to feelings of satisfaction? Describe these.

C.3b STUDENT INTERVIEW SCHEDULE (FORM B)

BD INTERVIEW

Interviewer____________________ Interviewee__________________ Date _______

I.

1. In the last two or three weeks, what specific incidents have led to feelings of satisfaction with the program? Specify in as much detail as possible.

2. In the last two or three weeks, what specific incidents have led to feelings of dissatisfaction with the program? Specify in as much detail as possible.

3. Thinking over the program since you began in September, what are its most positive aspects?

4. Thinking over the program since you begin in September, what are its most negative aspects?

II.

1. During the past week, approximately how many hours were you in contact with:

a. Your MDA ____ ( )

b. Your MDE ____ ( )

c. Other MDA's ____ ( )

d. Other MDE's ____ ( )

e. Other physicians ____ ( )

f. Faculty ____ ( )

g. Administrators (e.g. Dean) ____ ( )

h. Other BD's ____ ( )

2. Are the hours indicated in each of the above fairly representative of the amount of time you spent each week over the last month?

YES __________ NO ________

If not, indicate the amount of time usually spent in the parentheses.

III.

1. To date, have you consulted with other MDAs, MDEs or physicians in the community regarding your studies? (Note to interviewer: Attempt to get the names of the physicians and some indication of the frequency as well as whether the consultation was initiated by the BD, his MDA, or someone else).

Name	Frequency	Initiator

2. Please list the problems you have completed in the order you have completed them and the date you took the Level 4 exam for each.

Problem	Date Completed	Problem	Date Completed
1. ________________	____________	4. ________________	____________
2. ________________	____________	5. ________________	____________
3. ________________	____________	6. ________________	____________

3. What problem are you currently working on? ______________________________

4. How many problems do you expect to finish by the end of the semester? ________

5. How well do you expect to do on the Chicago Comprehensive exam?

Outstanding _____ Satisfactory ____ Unsatisfactory _____

6. How well do you expect to do on the National Boards?

7. Relative to the other BD's, how well do you expect to do on:

A. The Chicago Comprehensive: rank (1-16) ________

B. The National Boards: rank (1-16) ________

8. How frequently do you discuss the basic sciences and related problems with:

Name	Frequency
Batko	____
Bowton	____
Delheimer	____
Fozard	____
Ginsburg	____
Hoskins	____
Marmion	____
Neese	____
O'Donoghue	____
Rusthoven	____
Schutz	____
Sidler	____
Stiegman	____
Vhrel	____
Westrick	____
Ziarko	____

0=Never
1=Seldom
2=Occasionally
3=Often
4=Always

9. How would you describe the study strategy that you are using currently? Has this strategy changed since the beginning of the year? How?

APPENDIX D

CURRICULUM

CLINICAL PROBLEM INDEX

Wound Healing

Discipline	Unit No.	Unit Description
Anatomy	29	Gluteal Region and Posterior Thigh, Hip
	30	Femoral Triangle, Anterior and Medial Thigh
	31	Popliteal Fossa, Knee, Thigh and Leg Bones
	32	Anterior and Lateral Leg, Dorsum of Foot
	33	Posterior Leg
	34	Ankle and Foot
Biochemistry	--	
Genetics	9	Sex-linked Inheritance
	(3)	Clinical Cytogenetics
Histology	1	Histological Techniques
	2	Cytology
	3	Epithelial Tissue
	5	Connective Tissue Proper
	6	Cartilage and Bone
	7	Blood and Bone Marrow
	8	Lymphoid Tissue
	22	Cardiovascular System
	24	Integumentary System
Immunology	5	Structure and Function of Immunoglobulin IgG
	6	Gel-diffusion Analysis of Immunoglobulins
Microbiology	1	Host-parasite Relationships
	2	Infection
	8	Defense Variation - Increases
	49	Pseudomonas and Bacteroides
Neurosciences	--	
Pathology	1	Wound Healing
	2	Displacements and Disruptions of Continuity I
	15	Repair After Injury and Death of Cells
	20	Pathology of Physical Agents
Pharmacology	1	Molecular Basis of Drug Action
	2	Drug Absorption
	3	Drug Distribution
	4	Drug Metabolism
	5	Drug Excretion
	6	Biological Variation, Statistics, Dose-response curves, Placebo Effect
	7	Adverse Drug Effects
	8	Drug Dependence
	9	Prescription Writing
	10	Autonomic Drugs, Neurotransmitters
	11	Parasympathomimetic and Parasympatholytic Agents
	15	Local Anesthetics
	30	Principles of Antibiotic Therapy
Physiology	21	Circulation - Blood

ANATOMY UNIT 33

Subject Matter: Posterior Leg--blood vessels, lymphatics, muscles, and nerves of the posterior compartment of the leg (sural region)

Prerequisites: Units 31 and 32

Objectives:

The student should be able to:

1. locate and describe the actions of the 7 posterior leg muscles.
2. identify the nerves of the posterior leg and their innervations of skin and muscles of the sural region.
3. locate the superficial and deep blood vessels of the posterior leg.

Key Words:

gastrocnemius, soleus, plantaris, flexor digitorum longus, tibialis posterior, flexor hallucis longus, and popliteus muscles; posterior tibial and peroneal arteries and veins, small saphenous vein; tibial, deep and superficial peroneal, sural, medial sural, lateral sural, and peroneal connecting nerves; flexor retinaculum (laciniate lig.)

Pretest:

1. Diagram the position of the deep posterior leg muscle tendons on the back of the medial malleolus.

2. Which two arteries are attached to the upper end of the posterior tibial artery?

3-4. Six of the seven posterior leg muscles have a common action which is ______________. The seventh muscle is the ______________.

5-6. The two nerves which unite to form the sural nerve are ______________ and ____________________.

7-8. The two muscles which can both flex the leg and plantarflex the foot are ______________ and ________________.

9. What is freshman's nerve?

10. What is the designation of both gastrocnemius and soleus muscles together?

Instructions for Study:

The small saphenous veins and sural nerve travel in the superficial fascia of the back of the leg. There are seven muscles: three superficial muscles forming the calf (sural region) and four deep muscles. The

Anatomy Unit 33 - 2

superficial muscles attach to the calcaneus and plantarflex the foot. One of the deep muscles, the popliteus, lies behind the knee, as its name suggests. The other three deep muscles run behind the medial malleolus, are held in place by the flexor retinaculum (formerly, laciniate ligament) and plantarflex the foot. Also in this posterior region are nerves and blood vessels that go to the plantar side of the foot.

See Clemente film #31 before reading Woodburne, pp. 556-559. Examine the cadaver material and be sure to check over the references listed below.

Grant's Method, pp. 406-412
Bassett reels #194-196

Self-Test:

1. The peroneal artery arises from the:

   a. anterior tibial.
   b. posterior tibial.
   c. popliteal.
   d. femoral.
   e. lateral femoral circumflex.

2. In the leg the posterior tibial artery:

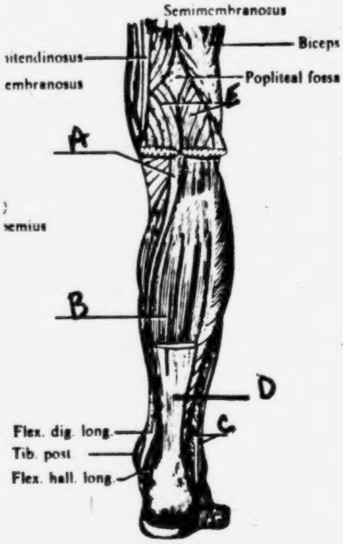
   a. lies medial to the tibial nerve.
   b. provides the nutrient branch to the tibia.
   c. is covered by the gastrocnemus and soleus muscles.
   d. all of the above
   e. a and c above

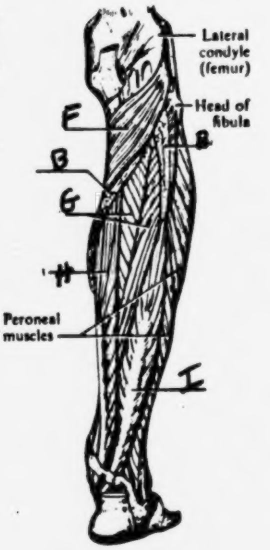
3. The superficial muscles of the posterior leg all insert into the:

   a. calcaneus.
   b. talus.
   c. medial malleolus.
   d. lunate.
   e. none of the above

Locate the following:

4. Gastrocnemius m.
5. Popliteus m.
6. Tibialis posterior m. →
7. Soleus m.
8. Flexor hallucis longus m.
9. Achilles tendon


Semimembranosus
itendinosus
embranosus
Biceps
Popliteal fossa
E
A
}
emius
B
D
C
Flex. dig. long.
Tib. post
Flex. hall. long.


Lateral condyle (femur)
Head of fibula
F
B
B
G
H
Peroneal muscles
I

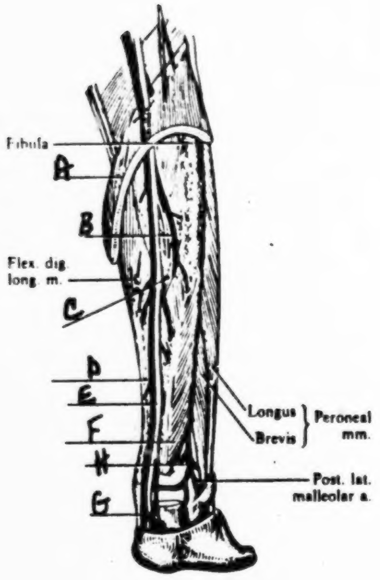
Anatomy Unit 33 - 3

Locate the following:

10. Peroneal artery

11. Posterior tibial artery

12. Tibial nerve


Fibula
A
B
Flex. dig. long. m.
C
D
E
F
H
G
Longus
Brevis
Peroneal mm.
Post. lat. malleolar a.

Answers

Pretest:

1. Woodburne, pp. 557-558
2. popliteal and anterior tibial
3. plantar flexion of the foot
4. popliteus
5. peroneal connecting
6. medial sural
7. gastrocnemius
8. plantaris
9. tendon of insertion of the plantaris muscle
10. triceps surae

Self-Test:

1. b
2. d
3. a
4. e
5. f
6. g
7. b
8. h
9. d
10. h
11. d
12. e

APPENDIX E

PAPER

On Assessing "Quality" of Health Care

ON ASSESSING "QUALITY" OF HEALTH CARE

by

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ON ASSESSING "QUALITY" OF HEALTH CARE*

There is little question that this country is currently wrestling with some major issues regarding the health of its people. Issues which, at one level, are expressed in debates over programming and financing are, at another level, reflections of attempts to come to grips with some very fundamental questions about the proper relationship between the citizen and his government in a democratic society.

As the costs of health care have skyrocketed, and as various political solutions to the problems of improving and/or maintaining the nation's health have been offered, the health field itself has become highly visible to the public. Given this increased visibility, and given the vast sums of money which this attention has generated to solve health and related problems, one can predict that increasing concern will be focused on how to measure the consequences of various health programs and strategies. Such concern is to be expected; the taxpayer and his representatives in Congress need criteria which enable them to evaluate the outcomes of alternative ways of utilizing available resources.

As the problem of constructing indices, i.e., of measuring results, becomes more visible as a consequence of increased expenditures, pressure will mount to find solutions. As this pressure mounts, it is likely that short-run "satisficing" solutions will be offered.[1] Our own research experience suggests that the consequences of such a situation are likely to be unfortunate.

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Most activities in the health field revolve around the performance of some form of work on people. It is the outcomes of this work that we are attempting to measure when we talk about "quality" of health care. But, as Kimberly has argued elsewhere, when people, as opposed to inanimate objects, constitute the raw material on which work is performed, there is a generic problem of defining a set of valid indicators of results.[2] When this generic problem is coupled with a situation in which there is a high degree of urgency attached to the development of such indicators, the likelihood that indicators of relatively low validity will be accepted is increased. However, to the extent that there is genuine widespread concern with improving the health care system in general, the emergence of indicators of low validity will be likely to hinder progress or perhaps lead to counter-productive outcomes--given that there is a general tendency in social systems to adapt patterns of behavior to what is being measured.

As part of a larger research project designed to study the impact of new medical schools on local health care delivery systems, we had the occasion to review the voluminous literature addressing the issue of the "quality" of health care. One conclusion which emerged from this review was that there is a significant amount of variability concerning the way in which the problem itself is defined. The purpose of this paper is to present a framework which was developed in an attempt to redefine the problem and to integrate what, at first reading, seemed to be irreconcilable differences among various approaches. The framework is presented with the explicit objective of providing a perspective on, or way of thinking about, the problem of defining quality of health care which will hopefully be of some use as the pressures to develop operational definitions of quality increase.

For the sake of brevity, a basic familiarity with the literature on the definition of quality of health care is assumed.[3] For the purposes of orientation, it should be stated that a general and reasonably broad definition of what is meant by "health care" is used. While some writers have distinguished between health care on the one hand and medical care on the other, no such distinction is made here. The approach taken was to begin with a broad, general definition within which most of the literature encountered could be included. By the term health care in this paper, is meant any intervention in the life space of an individual or group of individuals the explicit or implicit objective of which is to maintain, restore, or develop a state characterized in the ideal case, by an absence of illness, impairment, or injury.[4]

During the course of the review, a wide variety of books and articles dealing with the definition or assessment of the quality or results of health or medical care was covered. While this review was extensive and, from our perspective, thorough, some errors of omission may have occurred. The reader will have to judge the effects of any such omissions on the validity of the proposed framework for himself.

Analytic Dimensions

As others who have written in this area have pointed out (e.g., Donabedian[5], Kerr and Trantow[6], and DeGyndt[7]), the concept of "health care" is clearly multi-dimensional. Attempts to define and measure the quality of health care should, therefore, reflect this multidimensionality if they are to be valid indicators. Definitions and measures which are not sensitive to this property of the concept are likely to be inadequate, particularly since there has been very little work at the empirical level designed to provide a basis for assigning weights to the different dimensions. At the policy level, the implications are particularly significant. Attempts to evaluate programs designed to improve the quality of health care which focus on only one dimension of quality are likely to be inadequate. Decisions on expenditures which rely on such evaluations will reflect this inadequacy.

Conceptually, two analytic dimensions appeared to provide a basis for ordering the literature and for encompassing the multimensional nature of "health care". The first dimension has been labelled the system referent of quality. By system referent is meant the unit in terms of which evaluation of quality is made. Four different referents were distinguished: individuals; organizations; communities; and larger territorial units such as states, regions, or nations. Each of these has been the focus of attempts to define quality of health care; while ultimately the focus is on the individual in every case, for the purposes of planning and programming, attention is necessarily drawn from specific individuals to larger social aggregates and/or territorial units within which individuals are located. Measures which reflect the quality of health care provided in or available in these larger units must therefore be developed. As might be expected these measures are not necessarily the same as those used where the individual is the system referent.

The second dimension which serves to order the literature is the criterion of measurement. A variety of operational indices of quality has been used in the literature, as Roemer, among others, has pointed out, and this dimension is intended to reflect the existing variability.[8] Three general sets of criteria are suggested: end result measures, i.e., measures which focus on changes in measureable aspects of health status which can be attributed to some form of intervention; standards of performance measures, i.e., measures which compare various aspects of provider performance to standards which have been developed by the profession and are presumed to reflect optimal or ideal performance given the "state of the art"; and scope of services measures, i.e., measures which reflect the range, for example, of trained personnel and facilities for care which are available. It should be noted that in distinguishing among these three sets of criteria for measurement we are attempting only to provide a way of categorizing the literature that has been produced on the topic; we are not implying that the three are empirically independent. In fact, it might be argued that, controlling for scope of services, end results are likely to be more positive in those instances where provider performance closely approximates standards set by the field.

When the two dimensions discussed above are cross-classified, the result is a three by three table which includes all possible combinations of system referents and criteria of measurement. Table 1 below presents the classification scheme along with examples of each combination drawn from the literature for the purposes of illustration.

Insert Table 1 about here

This classification scheme is designed to provide a way of thinking about the problem of defining and measuring "quality" of health care. Among other things, it implies that multiple measures of quality are likely to result in the most valid indicators; however, the multiple measures approach has at least one major problem associated with it: temporal variability among the feedback cycles of different indices. Some measures, such as standards of performance criteria, can be applied within relative constricted time frames; other measures, particularly some kinds of end result measures, are not available until years after a given intervention has occurred. The problem is analogous to evaluating the quality of educational interventions. In the short run, one can focus on, for example, the performance of students on national achievement tests or the percentages of students that go on to college (I am assuming here that either of these measures is necessarily valid). Other indices, however, only become measureable over long periods of time. The impact of a school on the earnings potential of its graduates is but one example. The point being made is that different measures of quality of health care have different feedback cycles associated with them. While it is not argued that the longer the feedback cycle the more valid the measure, we would suggest that substantial costs may be incurred by focusing exclusively on measures which provide relatively immediate feedback.

Additional Considerations

In outlining the classification scheme, two kinds of considerations which have been prominently mentioned in the literature have been left out. The first consideration has to do with consumer perceptions about, acceptance of, and attitudes toward various health care interventions. The complexity of this consideration cannot be overemphasized. It can be argued, on the one hand, that consumer attitudes and beliefs are independent of any evaluation of quality per se. In this view, quality is most usefully evaluated in terms of a set of "objective" criteria which reflect current levels of development in medical technology. On the other hand, it can be argued that no evaluation of quality is complete without some consideration of the factors that influence the nature of the interaction between provider and consumer. Care which is by all objective measures of very high quality may produce consumer reactions which are highly negative and which might, therefore, have the effect of reducing utilization. According to this line of reasoning, one component of quality has to include the attitudes of consumers or potential consumers toward specific interventions. It should be pointed out that the two points of view are not necessarily incompatible. If one is ultimately interested in program evaluation, then the former conception of quality becomes one component of effectiveness and consumer attitudes and acceptance are a second. According to the latter conception, these two are expressed as a single component. Our point in raising the issue here is to underline the importance of including consumer attitudes either directly or indirectly in the evaluation of quality of health care. In addition, we would suggest that an important, but often overlooked, constraint on quality is the attitudes and beliefs of providers as well. Omitting this dimension from evaluation implies an assumption of either random variation of attitudes in the population or homogeneity of attitudes in the population. Neither assumption appears to us to have a great deal of face validity. The importance of this dimension needs to be explored in much greater depth than it has been in the past.

The second consideration which has received some attention in the literature is cost. In our view, cost itself is not a component of quality, and can--theoretically at least--vary independent of quality. There is no reason to assert categorically that high quality care is necessarily high cost care. To say that cost is not a component of quality is not to say that cost is unimportant in the evaluation of health care programs. In fact, in practice cost may be one of the most important criteria used to determine not only which programs get funded initially, but which programs receive continuing support from the government as well. As Roemer and others have pointed out, determination of costs is a highly complex matter and subject to a variety of kinds of error.[9] While it is undoubtedly the case that more sophisticated techniques for determining costs are needed in the health field, it is also the case that financial costs per se do not reflect a variety of less tangible costs and benefits. As concern for the "quality of life" becomes more widespread, formulators of social policy will have to take these less tangible dimensions into account in making decisions about how resources are to be allocated.

Implications

The assessment of "quality" of health care is a difficult undertaking. The framework developed in this paper to classify the literature on the subject indicated that various approaches have differed with respect to both the systems of reference employed and the actual indices used. The result is, at best, lack of consensus over definitions of the most appropriate way to assess quality in this context.

In addition, it was argued that the increased visibility of the health sector will generate increasing pressure to develop indices of program outcomes. As ways of measuring outcomes are sought, validity is likely to be sacrificed on the altar of expediency. To the extent that this actually occurs, it is highly probable that effective and efficient delivery of health care to the population will be impaired.

Such a result would be unfortunate and ways of minimizing its occurrence should be explored. In this regard, it is our view that there is no "one best way" to assess quality of health care. To a large extent, the kinds of indices used should be a function of the particular problem being addressed. While quality as a general concept is clearly multidimensional, and while a variety of components of quality may be isolated in relation to any particular program, it is incorrect to assume that the same components will be relevant across problems or contexts. This is clearly an implication of the framework, and suggests, among other things, that one should carefully specify the system referent for quality; indices appropriate where an organization such as a hospital or a clinic is the referent may clearly be inappropriate where a geographical region is the referent. Efforts to develop comparability in assessments of quality should not be confused with efforts to develop uniformity. Comparability is highly desirable; uniformity, following the logic above, may not be. The policy implications of this view hopefully do not need further elaboration.

Given that attempts to assess quality should reflect the nature of the context in which the assessment is being made, emphasis should be placed on developing measurement techniques which have been carefully designed to minimize the unintended consequences they produce. As noted earlier, behavior in social systems tends to adapt to criteria for measurement which are established. The case of the introduction of a quota system for issuing parking tickets into a police force provides an interesting, if somewhat extreme, example. Once the quota system was adopted and sanctions invoked for failure to meet the established criteria, members of the force did what might have been predicted--they made certain that they did not fall below the quota. Some unintended consequences occurred, however. The story is told of a burglar escaping while his car was being ticketed by a policeman doing his duty as it was being defined for him by the measurement criteria that had been established. In analogous fashion, one might expect that if the technical competence of the provider became the primary criterion for the assessment of quality, for example, the nature of the interaction between provider and consumer, an important determinant of health care outcomes, might suffer as a result. While none of us is clairvoyant, attention should be paid insofar as possible to the possible behavioral consequences that adoption of a particular criterion or set of criteria for the assessment of quality might produce.

By way of summary, three considerations should be reemphasized. First, there appears to be no one best way to assess quality of health care. In a sense, the "quality" of the assessment of quality is a function of the appropriateness of the index or indices used for the particular system referent in question. Second, assessments should be made with some awareness of the potential consequences for behavior that the choice of a particular measurement criterion or set of criteria itself produces. This consideration cannot be stressed too heavily. Finally, care should be taken in the development of indices of quality to avoid exclusive reliance on technical or technological criteria. While this consideration has been only indirectly alluded to in the paper, quality is important socially only insofar as it has positive consequences for the health status of individuals. As such, it cannot be considered apart from the social context in which it is being assessed. To the extent that increasing technological sophistication is viewed as being isomorphic with increased rationality in the development, delivery, and evaluation of health services at the same time that social and psychological consequences for individuals and groups are being overlooked, the long-run prognosis for our health system is less optimistic than it might otherwise be.

Table 1

A Classification Scheme for
Literature on the Assessment of "Quality" of Health Care

SYSTEM REFERENT

		Individuals	Organizations	Communities	Geographical Units
CRITERION OF MEASUREMENT	End Result	measurable change in the health status of an individual as a consequence of a particular intervention	aggregate changes in the health status of clients, patients or inmates between entering and leaving the organization (compared to other organizations with similar domains	aggregate changes in the health status of a community at two different points in time (compared to other communities of similar size, income, etc.)	aggregate changes in the health status of inhabitants of a geographical area at two different points in time (compared to other areas of similar size, income, etc)
	Standards of Performance	provider performance on a particular individual relative to standards set by the profession	aggregate indices of the performance of multiple providers across individuals within a particular organization relative to standards set by the profession (compared to other organizations with similar domains)	aggregate indices of performance of multiple providers across individuals within a community relative to standards set by the profession (compared to other communities of similar size, income, etc)	aggregate indices of the performance of multiple providers across individuals within a geographical area relative to standards set by the profession (compared to other areas of similar size, income, etc)
	Scope of Services	services available to a particular individual (compared to other individuals with similar presenting problems)	services available within a particular organization (compared to other organizations with similar domains)	services available within a particular community (compared to other communities of similar size, income, etc)	services available within a particular geographical area (compared to other areas of similar size. income, etc)

REFERENCES

1. The distinction between "optimizing" and "satisficing" in the decision-making process is discussed in J. G. March and H. A. Simon, Organizations, John Wiley & Sons, 1958.
2. Kimberly, J. R. A theoretical perspective on behavior-focused organizations. Health Services Research Program, University of Illinois, February, 1972.
3. Extensive bibliographies on the subject can be found in, for example, A. Donabedian. Evaluating the quality of medical care. Milbank Memorial Fund Q 44: 166-206, July, 1966; I. Altman and A. J. Anderson. Methodology in evaluating the quality of medical care: An annotated selected bibliography, 1955-1961. University of Pittsburgh Press, Pittsburgh, Pa., 1962; and B. Klein, Evaluating outcomes of health care: An annotated bibliography. California Center for Health Services Research, Los Angeles, August, 1969.
4. This definition is based on that used by Kerr and Trantow. Kerr, M., and Trantow, D. J. Defining, measuring and assessing the quality of health services. Perspectives and a suggested framework. Public Health Rep 84: 415-424, May 1969.
5. Donabedian, A., op. cit.
6. Kerr and Trantow, op. cit.
7. DeGyndt, W. Five approaches for assessing the quality of care. Hospital Admin 15: 21-42. Winter 1970.
8. Roemer, M. I. Evaluation of health services programs and levels of measurement. HSMHA Health Rep 86: 839-848, September 1971.
9. Roemer, op. cit.